# UNIVERSITY OF TORONTO MEDICAL JOURNAL

## GERIATRICS


Editorial 92

The Pathology of Atherosclerosis
D. C. Price, 5T8 94

The Problem of Surgery in Advancing Age
W. N. Tytaneck, 5T7 100

Realistic Rehabilitation: An Essential Part of The Programme
J. Ireland, P. & O.T. 5T7 104

SUPPLEMENTARY SECTION — PSYCHIATRY

What is Psychotherapy? D. Cappon, M.B. 107

Schizophrenia P. C. S. Hoaken, 5T7 112

Problem in Diagnosis: Surg. Sublt. M. A. Tyber, 5T8 119

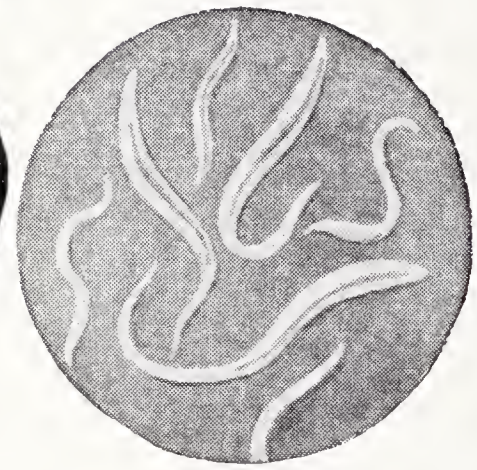


FEBRUARY 1957

VOLUME XXXIV NUMBER 4

90-95% effective

in eradicating PINWORM and ROUNDWORM infestation



# "VERMISOL"

BRAND OF PIPERAZINE HEXAHYDRATE

*For INFANTS and CHILDREN*

*Easy to Take — Pleasant Tasting*

**"VERMISOL" SYRUP**

SYRUP No. 634 "Frosst"

*Each 5 cc. teaspoonful contains:*

Piperazine hexahydrate (as tartrate) ..... 500 mg.

*Bottles of 4 and 16 fluid ounces*

*For ADULTS and OLDER CHILDREN*

**"VERMISOL" TABLETS**

TABLET No. 807 "Frosst"

*Each tablet contains:*

Piperazine hexahydrate (as tartrate) ..... 250 mg.

*Bottle of 100 tablets*

Charles E. Frosst & Co.
MONTREAL CANADA

**DOSAGE FOR PINWORMS:**

Infants up to 15 lb. (6 months)
½ teaspoonful or 1 tablet, once daily
Children up to 30 lb. (1 year)
½ teaspoonful or 1 tablet, twice daily
Children 30 to 60 lb. (2-5 years)
1 teaspoonful or 2 tablets, twice daily
Children over 60 lb. and adults
2 teaspoonfuls or 4 tablets, twice daily

Vermisol may be administered for 14 consecutive days or, alternatively, for two 7-day courses one week apart.

A simplified course of treatment has recently been found effective. In accordance with the results of the study, the following regimen may be used:

Infants up to 16 lbs. (6 months) 1 teaspoonful or 2 tablets
Children up to 40 lb. (1-2 years) 2 teaspoonfuls or 4 tablets
Children 40 to 60 lb. (2-5 years) 3 teaspoonfuls or 6 tablets
Children over 60 lb. and adults
4 teaspoonfuls or 8 tablets (maximum dose)

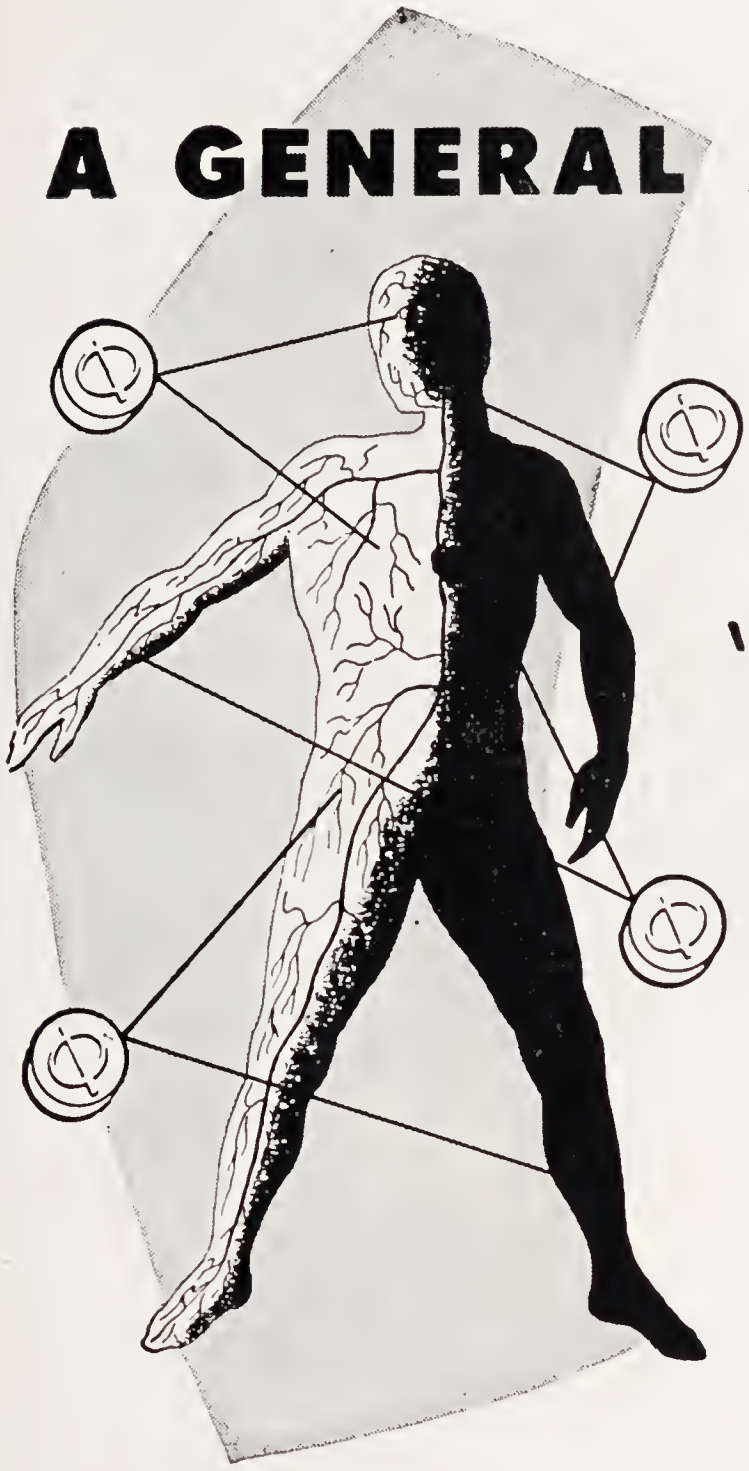
These quantities should be administered in a single dose before or after breakfast for 6 consecutive days.

Whatever procedure is adopted, cure must be established by determining the absence of ova by means of the anal swab.

**ROUNDWORMS:** One 5 to 7-day course of treatment is usually sufficient.

**CAUTION:** With overdosage the following reactions may occur: nausea, giddiness, lack of co-ordination, flashes on closing the eyes, inability to focus vision and a sense of detachment. These untoward effects are temporary and disappear when medication is discontinued.

# A GENERAL ANALGESIC



## for relief of

# PAIN

## "ACETOPHEN"

Brand of acetylsalicylic acid

## COMPOUNDS

**WITH CODEINE**

**"222 TABLETS"**
(Coloured White)

Acetophen . . . . . 3½ gr.
Phenacetin . . . . . 2½ gr.
Caffeine citrate . . . . . ½ gr.
Codeine phosphate . . . . . **1/8 gr.**

*This formula is also available as* **"262 TABLETS"** *(grey).*

Ⓝ **"282 TABLETS"**
(Coloured Yellow)

Formula of "222 Tablets" modified to contain Codeine phosphate. . . **1/4 gr.**

Ⓝ **"292 TABLETS"**
(Coloured Pink)

Formula of "222 Tablets" modified to contain Codeine phosphate. . . **1/2 gr.**

Ⓝ **"294 TABLETS"**
(Coloured White)

Formula of "222 Tablets" modified to contain Codeine phosphate. . . **1 gr.**

**DOSAGE:** One to two tablets as required.

Available according to your prescription.

Ⓝ Telephone narcotic prescription permitted

***ACTION STARTS IMMEDIATELY***

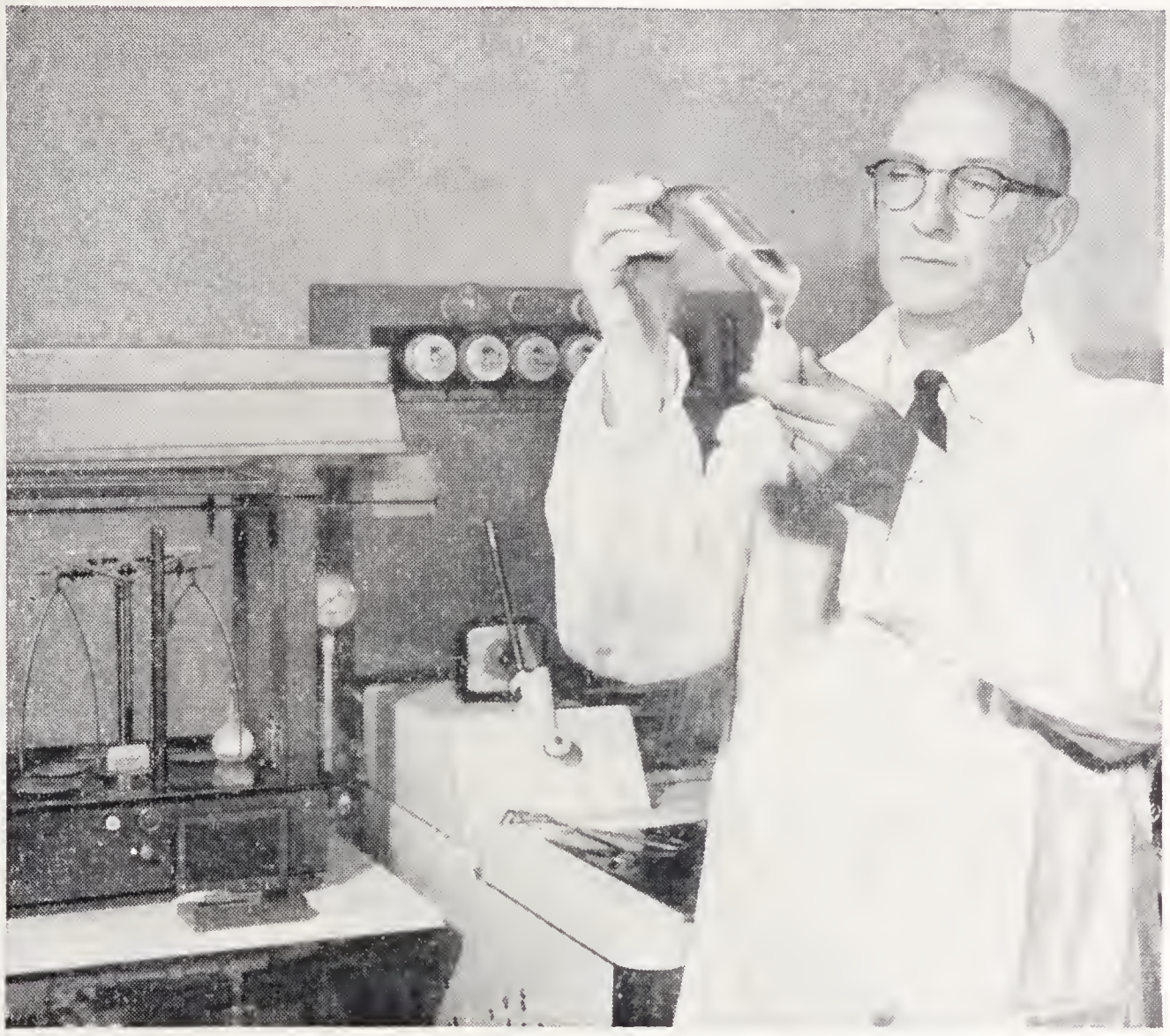
Charles E. Frosst & Co.
MONTREAL CANADA

. . . with more time to keep abreast of medical development . . . because you have freed yourself of all the tedious detail, to say nothing of the expense, of running a dispensary. Your pharmacist is a full-time professional assistant with a complete stock of pharmaceuticals at your disposal.

Let him do *all* your dispensing.

ONTARIO RETAIL PHARMACISTS ASSOCIATION

THE ONTARIO RETAIL PHARMACISTS' ASSOCIATION



W. D. LAVERTY—25 years milk laboratory experience—conducts quantitative butterfat test on evaporated milk using the Majonnier method and testing equipment.


# Just one of a number of checks

During processing, Farmer's Wife Formula Milks constantly undergo a number of tests in the plant and laboratory. Even after vacuum sealing in the most modern type of container, the quality of the individual can and contents is verified. It is this kind of constant check that leads doctors, paediatricians and hospitals from coast to coast to confidently recommend Farmer's Wife Formula Milks.

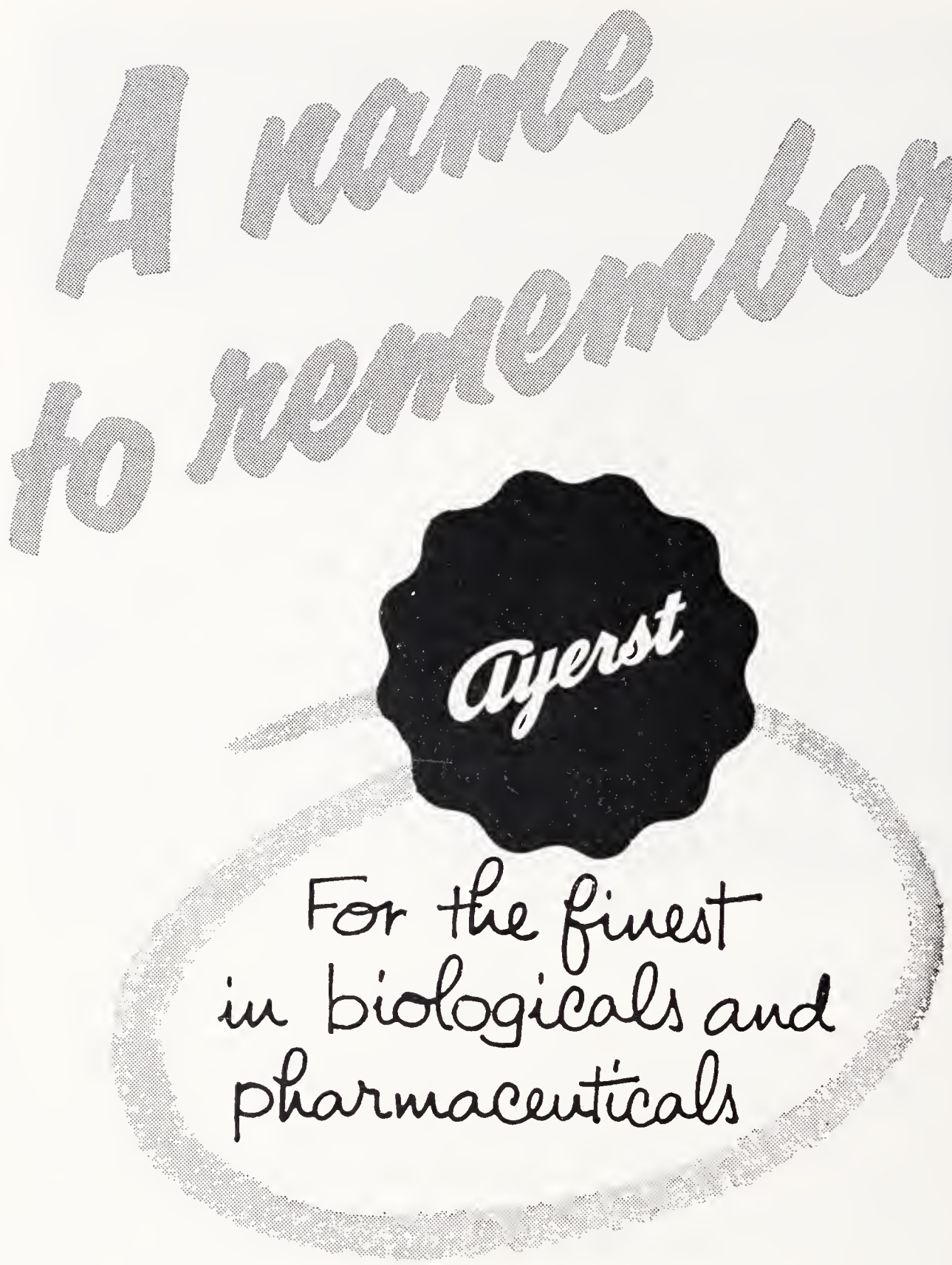
- Evaporated whole milk
- Concentrated skimmed milk
- Concentrated partly skimmed milk

**Farmer's Wife**

COW AND GATE (CANADA) LIMITED

7-6

*"Specialists in the Preparation of Milk Foods for Infant Feeding"*




**AYERST, McKENNA & HARRISON LIMITED**

MONTREAL

UNIVERSITY OF TORONTO
# MEDICAL JOURNAL

ESTABLISHED DECEMBER 1923
AN UNDERGRADUATE PUBLICATION

VOLUME XXXIV NUMBER 4
TORONTO, FEBRUARY 1957

*Editor-in-Chief* ..... J. C. Deadman, 5T7

*Associate Editor* ..... A. C. Strickler, 5T8

*Assistant Editors* ..... J. A. Lowden, 5T7
S. Rabinovich, 5T7
M. A. Tyber, 5T8

*Business Manager* ..... W. P. Bell, 5T8

*Advertising Manager* ..... P. C. F. Moore, 5T9

*Circulation Manager* ..... P. B. Dent, 6T0

This Journal is published six times a year from November to April, by the Medical Society of the University of Toronto, to serve primarily as a medium for student expression.

Subscription Rates: $3.50 for one volume of six consecutive issues. Single copies 65¢.

Information to Contributors

Manuscripts including references and footnotes should be typewritten double spaced on one side of the paper. References should be kept to a minimum and should be cited numerically in the order in which they appear in the text.
Illustrations are included by arrangement with the Editor. Drawings should be done on white paper in black ink.

Final copy date is the 15th of the month before the issue concerned.

Material printed in this journal is covered by copyright. Articles are accepted for consideration with the understanding that they are contributed for publication in this journal only.
Correspondence should be addressed to Room 114, Medical Bldg., University of Toronto, Toronto 5, Ontario.

Authorized as Second Class Mail, Post Office Department, Ottawa.

# EDITORIALS

## This Issue—Geriatrics

Geriatrics is a field with which every student becomes acquainted, almost in spite of himself. There is very little formal teaching on this subject and it has in fact only recently emerged as a full-fledged branch of Medicine. But anyone who has spent any time on the public wards is soon struck by the fact that nearly half of the patients are over 60, and in most of these, the outlook is made far worse by the reduced resistance and response to disease in age. And similarly, we soon realize, the treatment must often be modified to suit the age of the patient. So we consider Geriatrics without giving it a formal title.

In several of the articles in this issue, some of the various disease problems are mentioned. But it soon becomes apparent that the consideration of disease in age cannot be compartmentalized but one part flows into another, and they all flow into one of the more important problems which the older person faces, his lack of usefulness in a youthful society which seems to have passed him by. In a society such as ours which only in the past fifty years or so has emerged from its pioneering past, youth and independence are admired, and old age is regarded as some malignant disease; undesirable and inevitably fatal. And surely the older people must feel this, which does not contribute to a constructive and healthy attitude towards themselves. So it is not too surprising that older people do not respond as well to treatment as a younger person might, even without consideration of the physiological changes which have taken place in the body.

So one of the most important aspects of treatment is to provide some incentive to the patient to get well; something he should get well for. Society has failed to provide this and in fact is moving in the other direction. Science and Medicine have been finding ways to keep people alive longer while Society with ever lower, and rigidly enforced retiring ages, and the advent of mechanization has taken away the very things which a person may live longer for; the feeling of continued usefulness to the society. And so we have an ever-increasing generation of older people who are problems, at least partly, because they have nothing important to do.

It is not the doctor's position to start a crusade to change this, but it is his position to understand the problem and apply it to his treatment of older patients. The problem does not lend itself to an easy answer. Instead, we would probably be better to consider each case individually and treat it as such. While the patient cannot be restored to his previous important life-function, he usually can find something which is useful to others. It is probably in this respect that hobbies or crafts, except in rare cases, do not provide an answer; they do not prove useful to anyone else.

But for the time being at least, the problem rests with the doctor and he must be aware of this. To him falls the sometimes difficult task of providing some incentive for getting well.

### SUPPLEMENT—PSYCHIATRY

In this issue we present a Psychiatry Supplement. Dr. Cappon has written the first of a series of articles to be published this spring, on Psychotherapy. He has previously contributed a series to the Journal on Mental Mechanisms. With it we have presented an article by P. C. S. Hoaken, 5T7, on Schizophrenia.

### OMISSION

Due to an oversight, the acknowledgement was omitted in the article "Bronchiectasis" by N. P. Huschilt, in the December, 1956, issue. The author wishes to thank Dr. J. F. Paterson for his constructive criticism and suggestions in the preparation of this article.

# THE PATHOLOGY OF ATHEROSCLEROSIS

D. C. PRICE, 5T8

DEFINITION

"Atherosclerosis", as derived from its Greek roots, means literally a "porridge-like hardening". It has recently been defined by the American Society for the Study of Arteriosclerosis as "a disease, primarily of large arteries, characterized by plaque-like intimal deposits which contain neutral fat, cholesterol, lipophages, and sometimes blood or other evidence of hemorrhage. The lesion may remain stationary or enlarge, fibrose or calcify." The term atherosclerosis, then, is not synonymous with arteriosclerosis. The latter is a generic term of which atherosclerosis is only one type, although by far the most important type in clinical medicine.

This article will discuss the pathology of atherosclerosis from the viewpoint of occurrence, incidence, and microscopic and gross lesions. The atheromatous lesion will be outlined in all its forms, as occur in the aorta, and then in the more specific forms exhibited by the other major vessels affected.

OCCURRENCE AND INCIDENCE

Atherosclerosis is a disease which occurs spontaneously in man, in the chick, and in the duck. Cholesterol atheromatosis, however, can be produced experimentally in rabbits, dogs, and several other animal species. Certain nationalities, such as the Japanese, Chinese, Mongols, and South African Negroes, while living in their native countries have a much lower incidence of atherosclerosis than other nationalities, such as the people of North America. This difference, however, has been proven to be more directly related to dietary habits than to racial or hereditary factors.

In Western Man, atherosclerosis is three to five times as common in the male as in the female, the ratio being markedly greater before the female change of life, but reduced almost to unity afterward. Such evidence suggests an important part played by sex hormones, especially oestrogens, in the development of atherosclerosis. The disease increases both in incidence and severity with age, but reaches a peak in the sixth decade of life; children practically never shown clinical evidence of arterial atheromatous changes.

Atherosclerosis is accelerated and accentuated in certain disease states commonly associated with hypercholesterolaemia. The most important of these is diabetes mellitus, which frequently in later life results in peripheral atherosclerotic gangrene. Hypertension also increases the rate of development and the severity of the lesions, although believed not to be an initiating factor. Nephrosis and hereditary xanthomatosis are disease entities contributing to the atheromatous process. Cachectic diseases such as chronic severe tuberculosis appear to lessen the severity of atheromatosis, sometimes even causing retrogression of the lesions.

Atheromata are customarily seen in large elastic arteries and small arteries. Among large arteries, the aorta is the commonest and earliest affected, the iliac and femoral arteries becoming involved somewhat later. The small arteries frequently involved include the coronary, cerebral, carotid, vertebral, renal, tibial, and occasionally the mesenteric.

PATHOLOGY

(1) THE AORTA

The commonest sites of aortic involvement are:

(i) the posterior wall of the descending thoracic aorta, around and near the orifices of the intercostal arteries;
(ii) the region of the aortic bifurcation; and
(iii) the site of the obliterated ductus arteriosus.

In later life, the abdominal aorta is the portion most severely damaged by atheromatosis. However, in cases of syphilitic aortitis it is common to have extensive ulcerating atheromata scarring the portions of ascending and descending thoracic aorta damaged by the spirochaete. Pleomorphism is the rule in aortic atherosclerosis in later years, as many different forms of the intimal lesion may be present in one short length of vessel.

Aortic atherosclerosis does not result in progressive stenosis with ischaemia and infarction, as may occur in small end-arteries. Its most important complications include:

(i) formation of a cylindrical or fusiform aneurysm, which results from atherosclerotic weakening of the wall, and may later go on to rupture;
(ii) thrombus formation at the bifurcation of the aorta, which may obstruct the arterial supply to the lower limbs; and
(iii) mural thrombus formation on any ulcerated plaque, sometimes with the subsequent release of peripheral emboli.

Aortic atheromata will be described according to their anatomico-pathological stages.

(A) *Fatty Yellow Intimal Flecks and Streaks*

(i) *Gross*

In the gross, tiny yellow round or oval speeks may be seen in the aortic intima even at birth, but more commonly in the first decade of life. These fatty flecks, not elevated above the intimal surface, first appear above the aortic valve, and in the mitral valve itself; later they are seen in both the thoracic and abdominal aorta. At this stage the deposits are reversible, and frequently retrogress or disappear entirely.

(ii) *Microscopic*

The first microscopic evidence of atheroma is an accumulation deep in the intima of tiny intercellular and intracellular lipid droplets. These often form in lines along elastic fibrils next to the internal elastic lamina, which at this stage is becoming frayed and split, later to degenerate almost completely. The droplets are also seen in the increasing metachromatic ground substance of the intima.

As the droplets increase in number, they appear to be taken up by regional cells to form fat-filled lipophages—probably mesenchymal connective tissue cells which have become less differentiated and assimilated the lipid. This is a characteristic granulomatous reaction to foreign lipid in the tissue, as occurs in the tuberculoma.

(B) *Lipid-filled Plaques with Necrosis*

(i) *Gross*

In the second and third decades of life the fatty flecks tend to coalesce into larger, oval atheromata, frequently appearing as elevated yellow streaks parallel to the axis of the artery, one to two centimeters in length. As more lipid accumulates and the central cellular structure breaks down, producing a fatty cushion, the lesions become somewhat irregular in shape, deep yellow in colour. It is common in the aged to find subsequent necrosis of the endothelial surface of the plaque and ulceration of the yellow, granular contents into the artery,

producing a nidus for mural thrombus formation.

(ii) *Microscopic*

As the lipophages accumulate in the intimal lesions, the central cells become necrotic, and finally break down to form a pool of fatty debris in the centre of the atheroma. At this time, if it has not already occurred, there is a local endothelial proliferation and the beginnings of fibrosis and organization at either surface of the growing atheroma. Later, the larger necrotic lipid pools tend to spread in all directions in the intima.

Whereas the deposited lipid was originally almost the same composition as normal serum lipid—containing cholesterol, cholesterol esters, phospholipids, neutral fats, and fatty acids—now there is a predominance of cholesterol in the atheromatous cushion, and breakdown of cholesterol esters causes needle-like cholesterol crystals to precipitate in the central fat and adjacent connective tissue.

While the lipid is still in the form of deep intimal droplets, the aortic plaques are reversible, and may retrogress to leave only a slight fibrous intimal thickening. Once the central fatty mass has become necrotic, however, the lesions can only advance to the further stages to be described.

(C) *Connective Tissue Proliferation and Hyalinization*

(i) *Gross*

The next step in development of the atheroma is proliferation of connective tissue to form a substantial collagenous cap over the central lipid pool, causing the soft, yellow lesion to become hard and gray. Progressive hyalinization of this cap, then, brings further change to a pearly gray or pale translucent blue colour. The underlying lipid cushion may be seen shining through the translucent fibrous cap.

Such gray focal elevations of the intima as these are much more common in the young than in the old, being seen as early as the age of fifteen.

(ii) *Microscopic*

Concomitant with the previously described lipid accumulation in the intima there is a proliferation of intimal connective tissue cells, mainly on the luminal side of the plaque. This change is essentially an infiltration and multiplication of fibroblasts, forming a substantial collagenous cap on the atheroma. Sometimes even smooth muscle cells are found in the plaque. There is also an increase in the metachromatic ground substance present in the atheroma. Needle-like cholesterol crystals are frequent at the lipid edge of the fibrous cap. Quite soon the collagenous fibres of this cap begin to undergo hyaline degeneration, later even mucoid degeneration.

Such an atheroma may grow to twenty or thirty times the width of the media, accompanied by medial atrophy and total degeneration of the internal elastic lamina. When fibrosis occurs in intimal lesions with little lipid content, a simple fibrous thickening in the vessel wall is produced.

(D) *Vascularization*

(i) *Gross*

Capillary vascularization of the atheroma always accompanies connective tissue proliferation. This produces in itself no change in the gross appearance, but its frequent complication, hemorrhage into the plaque, is seen as a small reddish or bluish discoloration in the lesion. Such hemorrhagic expansion of a plaque in a small end-artery may result in precipitous occlusion of the vessel and subsequent infarction in the supplied organ; this does not occur in the aorta.

(ii) *Microscopic*

While the connective tissue portion of the plaque is becoming well established, tiny capillaries appear in this organizing tissue and form a definite vascular network around the lipid pool. Capillaries enter both from the lumen of the artery and from the vasa vasorum, anastomosing through the capillary network. Concomitant with the vascularization of the plaque, and possibly preceding it, there can usually be demonstrated a similar increase in the vascularity of the overlying media.

The nutritive capillary network in the plaque permits its continuing growth in size. In addition, it is this vascularization which, by means of its direct connection to arterial blood pressure in the vessel lumen, causes spontaneous subintimal hemorrhage, a prevalent complication of this lesion.

(E) *Calcification*

(i) *Gross*

Late in the progression of the atheroma, calcium deposits appear. These may show up as white spots in the atheroma, may be palpable in the artery wall on post-mortem examination, or may even be sufficiently large in the aorta to show up in X-ray plates. The calcium may form an eggshell–thin layer which cracks on handling. Calcified atheromata frequently go on to ulceration.

(ii) *Microscopic*

In the advanced atheroma, tiny calcium specks appear in the connective tissue cap, in the hyalinized collagen fibres, and even in the fatty necrotic mass. Occasionally the calcification has been known to progress to ossification.

(2) THE CORONARY ARTERIES

Although the most important clinical form of the disease, atherosclerosis in the coronary vessels appears later than in the aorta, and is not as severe. The lesions tend to occur primarily in the proximal segments of the vessels, and are characteristically seen on the myocardial rather than the epicardial aspect of the lumen. The order of involvement, both in time and severity, is:

(i) the first portion of the anterior descending branch of the left coronary artery, about one inch beyond its origin;
(ii) the main stem of the left coronary artery;
(iii) the first portion of the right coronary artery; and
(iv) the first portion of the circumflex branch of the left coronary artery.

As in the aorta, the first gross lesions in the coronary arteries are fatty flecks and streaks. In the second and third decades these flecks enlarge and develop into fatty atheromatous cushions. The early coronary lesions usually progress to organization and degeneration, but may retrogress and disappear. In later years, extensive intimal thickening, with marked impingement upon the lumen and atrophic thinning of the media, is more common than simple, isolated intimal plaques. Calcification occurs frequently.

Coronary atherosclerosis presents clinically either as transient myocardial ischaemia with pain (angina pectoris) or as acute coronary occlusion with myocardial infarction. The causes of coronary occlusion include:

(i) thrombosis on an ulcerated plaque;
(ii) progressive enlargement of a plaque;
(iii) hemorrhage into a plaque; and
(iv) rupture of a plaque, and plugging of the vessel lumen.

### (3) THE CEREBRAL ARTERIES

Cerebral atherosclerosis is the second most important clinical presentation of the disease. The cerebral vessels are affected later in life than the aorta and the coronary arteries, most demonstrable atherosclerosis occurring after the age of thirty.

The vessels most frequently involved are the arteries at the base of the brain, especially the basilar artery, and the circle of Willis and its main branches. After the age of fifty, the arteries to the basal ganglia may develop considerable atheromatosis as well. The carotid and vertebral arteries are often badly damaged by ulcerating plaques.

Atheromata in cerebral vessels follow in general the same pattern as coronary lesions. Duff and McMillan[1] have drawn attention to the specific histologic formation, seen only in cerebral vessels with fatty atheromatous cushions, of rupture of the internal elastic lamina, followed by extrusion of lipid through the gap into the weak media. This produces an hour-glass distribution of lipid between the two vessel wall layers, pinched in the middle by the remaining elastic membrane.

Cerebral atherosclerosis may lead to ischaemia and to infarction or softening by occlusion of the vessel lumen. In addition, atherosclerotic aneurysm occurs in the basilar artery in particular. Recent research has drawn attention to the previously unrecognized importance of internal carotid thrombosis in the production of the syndrome formerly attributed to middle cerebral artery thrombosis.

### (4) ARTERIES OF THE EXTREMITIES

Chronic arterial insufficiency of the lower limbs is a relatively common manifestation of atherosclerosis in the aged, especially in cases of diabetes mellitus. The vessels of the arms are rarely affected by clinically significant atheromatosis. The femoral and tibial arteries demonstrate the highest incidence of important atheromatous involvement, although small distributing arteries may become involved as well.

Intimal lesions in the peripheral arteries are often of a predominantly fibrous nature. However, characteristic lipid-containing cushions are also found, usually occurring in the proximal portions of the large vessels.

Peripheral atheromata may result in marked stenosis of the arterial lumen. Thrombosis frequently occurs on irregular or ulcerated plaques. Rarely, atherosclerotic aneurysms involve the common iliac or popliteal arteries.

### (5) RENAL ARTERIES

Renal involvement is a late manifestation of atherosclerotic arterial disease. The vessels affected are the small arteries of the kidney. Rarely they become so severely involved as to produce hypertension secondary to renal ischaemia. The arterial lesions follow the pattern of the coronary and cerebral atheromata, progressing to substantial lipid-filled plaques only late in the disease.

### (6) MESENTERIC ARTERIES

A moderate degree of mesenteric atherosclerosis is also a possible late occurrence in the atherosclerotic patient. The intimal lesions are most often seen close to the aorta, seldom in the distal ramifications of the arteries. Only occasionally do the lesions progress as far as visceral arterial insufficiency or infarction.

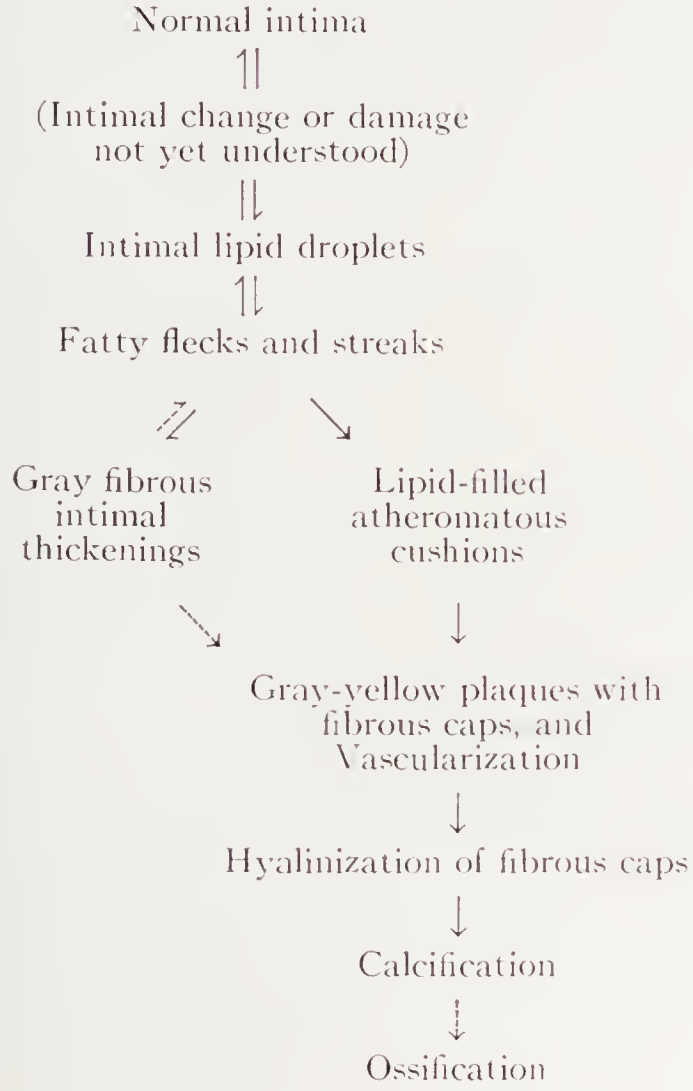
### (7) RETINAL ARTERIES

The retinal arteries themselves are sometimes involved in atherosclerosis. The fundal vessels studied diagnostically in ophthalmoscopic examination, however, are arteriolar in nature and conse-

quently not susceptible to atherosclerotic lesions. The venous nicking characteristic of atherosclerosis is not due to atheromata in the visible vessels, but is an arteriolar reaction to the hypertension so frequently asociated with atherosclerosis.

### (8) MISCELLANEOUS

Probably no artery in the human body has been left unscathed by the process of atherosclerosis. The pulmonary artery, interestingly, seldom exhibits severe plaques unless there is pulmonary hypertension present. Rarely can any intimal lipoid lesions be detected in the veins, and virtually never in the lymphatics. In hypercholesterolaemia, typical lipid deposits can be found, curiously enough, in such tissues as tendons, the eyelids, and mesenchymal tissues other than the arteries.




Simplified Analysis of the Development of an Atheroma.

### IN CONCLUSION

This article has attempted to separate the process of atherosclerosis—the greatest single killing disease in North America today—into a progression of individual, clear-cut stages. It must be realized, however, that, as in all analyses of biological processes, this has resulted in great over-simplification; none of the stages are as separate and distinct as they have been outlined here, nor do they invariably follow the exact order suggested.

The author hopes to be able in a future issue to present the current concepts of aetiology and pathogenesis of atherosclerosis, subjects of much controversy and of considerable therapeutic and preventive importance.

### ACKNOWLEDGMENTS

I am very grateful to Dr. H. M. Shanoff and Dr. J. D. Hamilton for their interest in, and their assistance in, the composition of this article.

### REFERENCES

1. Duff, G. L., and McMillan, G. C.: Am. J. Med., *XI*: 92, 1951.
2. Boyd, W.: Textbook of Pathology, Sixth Edition; Lea and Febiger, 1955.
3. Anderson, W. A. D.: Pathology, Second Edition; C. V. Mosby Co., 1953.
4. Cecil and Loeb: Textbook of Medicine, Eighth Edition; W. B. Saunders, 1955.
5. Gould, S. E.: Pathology of the Heart, First Edition; C. C. Thomas, 1953.

# THE PROBLEMS OF SURGERY IN ADVANCING AGE

W. N. TYTANECK, 5T7

ADVANCING age with its accompanying physiological process of deterioration and often, the presence of one or more complicating diseases, inevitably increases surgical morbidity and mortality. Surgical procedures for the aged were often looked on as terminal treatment, thus unfortunate delays and postponements commonly allowed the patient to reach the most advanced state of disease.

Improved living conditions with all technical and medical advances has increased the life expectancy from age 48 in 1900 to age 68 in 1950. More people are living to an older age. This is shown by the faet that the number of persons in America who are 65 years or more has quadrupled since the turn of the century, whereas the overall population has only doubled. The steady increase in number of older folk has brought surgery for the aged out of the realm of an oddity to a common recognized procedure. Improved surgical and anesthetic techniques and the realization of the importance of pre-operative and post-operative management, has shown that the elderly patient can withstand surgical procedures with a mortality rate not much greater than the younger patient.

## THE CHANGES IN AGE

### *Pathology*

During the process of aging, many physiological and physical changes occur which make geriatric surgery more hazardous. One of the great changes is a decrease in amount of elastic tissue in all organs and tissues of the body. Most organs and systems show some decrease in function as well.

In the cardiovascular system, a great many patients exhibit some degree of arteriosclerosis. Approximately 40 to 45% will have a systolic pressure above 160 mm. of mercury. Electrocardiogram changes may be seen in about 35 to 40%, and 20% will show X-ray evidence of cardiac enlargement. The arteriosclerotic changes in vessels results in diminished peripheral circulation and also in a decrease in the compensating mechanism for sudden blood loss which makes the elderly patient prone to rapid drops in blood pressure. There is usually an inadequate cardiac reserve, low blood volume and an associated anemia.

Respiratory system defects may be seen in about 35% of patients. Respiratory efforts may be diminished due to chronic emphysema, bronchitis, or other conditions. Many of these individuals manage well under normal circumstances but when confronted with some form of trauma, such as an anaesthetic or surgery, the diminished respiratory reserve may be inadequate, resulting in respiratory embarrassment.

Liver and kidney function is somewhat decreased with age. The kidneys are often the site of some primary disease and it is essential that sufficient fluids and electrolytes, and the blood pressure be maintained to ensure adequate functioning. Because of altered kidney and liver function, drugs are excreted at a slower rate and must therefore be used in smaller quantity.

### *Nutrition*

The nutritional state is a factor which should be given careful consideration. Many aged are careless in their eating habits. They eat when they want and only what they want. The consequence

is that the elderly patient may present in various stages of malnourishment with hypoproteinemia, avitaminosis, dehydration or disturbed fluid and electrolyte balance.

*Diagnosis*

It has often been found that in the geriatric patient the presenting clinical picture may not reflect the true picture. The diagnosis may be difficult to ascertain because the aged may show less sensitivity to pain or may be very intolerant and exaggerate minimal discomfort. They may minimize severe pain, have mild or moderate tenderness, yet have an acute gangrenous appendix or gall bladder. Careful appraisal should be given to any form of sign or symptom because the elderly patient shows a rapid fluctuation of physiologieal and physical reserve. A patient may present with very few signs or symptoms, then suddenly decline rapidly with a severe illness, fever and toxieity.

*The psychological problem*

Physiological changes in the proeess of aging are often aceompanied by psychological changes. Many aged people when faced with the prospeet of surgical treatment assume a negativistic attitude toward sueh procedure. They often lose the will to live and become very intolerant of any form of therapy. Sinee the progress of reeovery is aided significantly by the desire to get well, all elderly patients must be psyehologieally prepared for surgical treatment and postoperative recovery.

## ANESTHESIA

Reeent advances in anesthesia can be credited for markedly improving the prognosis of surgery for the aged. The anesthetic administered should be a safe one giving the best operating conditions by adequate relaxation and preventing hypoxia by adequate oxygenation. The elderly person is more suseeptible to anesthetics and drugs, small amounts often make a patient unusually depressed. The margin of safety is narrowed, making the anesthetist's task more difficult.

Practically every type of anesthetic has been used or advocated for the aged patient, the difference being chiefly in the quantity administered. Anesthetics commonly used are nitrous oxide, cyclopropane, ether, ethylene, sodium pentathol and trichlorethylene. Adequate muscular relaxation is obtained with relaxants such as anectine, curare and flaxedil. Spinal anesthesia is usually contraindicated in the extremes of age; however, some anesthetists and surgeons use it in selected cases of lower abdominal and trunk surgery. Wider use of local anesthetics is also advocated by many authorities.

The anesthetic used should put the patient in a light stage of anesthesia with adequate muscular relaxation obtained with the judicious use of relaxants. A clear airway is essential. This may be accomplished by intubation and, if necessary, aspiration of any bronchial secretions. The anesthetic of choice should be individualized for each patient with due consideration given to toxic effects and any existing complieating lesions. It is the duty of the attending anesthetist to take repeated blood pressure readings, replace any blood lost and use all means to prevent the development of shock. Preoperative sedation will vary with the patient. Small quantities are needed and oversedation should be avoided. Demerol is usually substituted for morphine.

## INVESTIGATION AND TREATMENT

Preoperative investigations should initially consist of the same routines used for all potential surgical patients. A careful history with a thorough physical

examination is required. Inquiry about eating habits will give an idea of the state of nutrition. An X-ray of the chest and an electrocardiogram will assist in recognizing respiratory and cardiac pathology. A complete urinalysis and blood for hemoglobin, sedimentation rate, white blood count, hematocrit, smear and differential are absolute essentials. Blood should be taken for typing, cross-matching, N.P.N., protein, Albumin-Globulin ratio, sodium, potassium, chloride and carbon dioxide combining power determinations. Further investigations may be governed by individual patients and existing complications. Most investigators find that the aged have low blood volumes and therefore advocate careful blood volume determinations. Elective surgical procedures should be delayed until abnormalities may be corrected or improved to give as ideal operating conditions as are practical.

Most aged patients have post-operative urinary difficulties and it is therefore advocated that such patients be sent to the operating room with an indwelling catheter. This catheter prevents post-operative urinary retention and enables bladder irrigations, thus minimizing the possibility of urinary infections.

*Surgery*

Surgical procedures should be direct, simpler techniques encouraged, and unnecessary trauma avoided. After most forms of surgery but in particular the major types, the patient should be dismissed from the operating room with a properly placed Levine tube. The tube is used with continuous Wagenstein suction to provide an adequate means for stomach and upper gastro-intestinal decompression. The inlying gastric tube can also be used for tube feedings in early post-operative period but it should be removed as early as possible and oral food intake encouraged. Surgical trauma usually results in decreased functioning of the kidneys; therefore, saline is restricted in the first 24 hours. All forms of intravenous therapy should be given cautiously to avoid overhydration and edema of the lungs. In the early post-operative period the cough reflex is usually depressed and if bronchial secretions are excessive, it may be necessary to do a tracheotomy to facilitate aspiration of secretions. The elderly post-operative patient is often content to rest motionless in bed, a factor favoring thromboembolism, pneumonia and atelectasis. It is essential that all patients be turned frequently, deep breathing exercises encouraged and early ambulation insisted upon.

*Complications*

The commonest post-operative complication in the aged is pneumonia. In addition to the post-surgical complications found in people of all ages, the elderly are more prone to develop atelectasis, cardiac or renal failure, phlebitis, embolism, coronary thrombosis or cerebrovascular accidents.

## THE PROBLEM OF EMERGENCY SURGERY

Emergency surgery, with lack of time for careful evaluation and correction of the physical and biochemical state, carries a higher mortality than elective procedures. R. K. Gilchrist and F. A. de Peyster found that in patients 70 years or more, the mortality rate of emergency biliary tract surgery was five times greater than non-emergency cases, and emergency colon-rectum surgery three times greater than elective colon-rectum surgery. Whenever possible, it is therefore desirable to revert any emergency into an elective procedure. Emergencies which need immediate treatment should not be postponed, if some simple treatment does not relieve the condition, for undue delay may result in rapid deterioration from a fair or poor physico-biochemical state to an extremely un-

favorable one. Some of the commoner surgical emergencies are:

(1) Hemorrhage or perforation from a peptic ulcer.

(2) Intestinal obstruction due to hernia, tumor, adhesions, volvulus, etc.

(3) Disease of the biliary tract.

(4) Gangrene of extremities associated with arteriosclerosis or diabetes.

## CONCLUSION

Old age alone is no longer a contraindication for surgery for the geriatric patient. People age at different rates and since old age may be complicated by various diseases, each patient must be considered on an individual basis. In order that morbidity and mortality after surgery for the aged be kept to a minimum, the following factors should always be considered:

(1) Early diagnosis followed by prompt treatment. Delays or postponements may permit sufficient deterioration in the patient so that recovery may be jeopardized.

(2) Careful preoperative evaluation of the cardiovascular, respiratory, and renal systems. Blood volume, body electrolytes and nutritional status should be ascertained and corrected. Any existing complicating diseases should be adequately treated.

(3) Elective procedures carry a better prognosis than emergency surgery.

(4) A safe anesthetic should be administered by a competent anesthetist. All blood or fluids lost during the operation should be skillfully replaced.

(5) Surgical procedures should be done with a minimum of trauma and long operations should be avoided.

(6) Careful post-operative care to prevent complications. Early ambulation is essential.

(7) Proper surgical treatment for recurring, cholecystitis or presence of hernia during the younger years may prevent unnecessary surgical risks to the person in advanced years. Since life expectancy is increasing, the above or other prophylactic measures may be considered during younger years to prevent emergencies during old age.

## References

1. Gilchrist, R. K., de Peyster, F. A.: Jour. of Amer. Med. Assn., 160: 16, 1956.
2. Stephen, C. R.: Jour. Can. Med. Assn., 73: 10, 1955.
3. Cutler, C. W., Jr.: New York State Jour. of Med., 55: 4, 1955.
4. Goode, J. V.: Texas State Jour. of Med., 50: 8, 1954.
5. Vaugh, A. V., White, M. S., and Coleman, J. M.: Jour. Amer. Geriatric Society, 4: 5, 1956.
6. Nealis, C. H., Kilgore, A. R.: The Surgery Clinics of N. Amer., Oct., 1954.
7. Ibberson, J. R.: Geriatrics, 10: 10, 1955.
8. Madigan, H. S.: New York State Jour. of Med., 55: 20, 1955.

# REALISTIC REHABILITATION: AN ESSENTIAL PART OF THE PROGRAMME

J. IRELAND, P. & O.T. 5T7

Grey hairs have many evils; without end
The old man gathers what he dare not spend,
While as for action, do what he will,
'Tis all half-hearted, spiritless and chill;
Inert, irresolute, his neck he cranes
Into the future, grumbles and complains,
Extols his own young days with peevish praise,
But rates and censures these degenerate days.

Horace

THE field of geriatrics is one that is rightfully receiving increased attention and study in the field of medicine today. Not so was the case in past centuries as indicated by the lines of a Roman poet of long ago.

There has been a growing awareness in the past half-century of the need of realistic rehabilitation of the aged, rehabilitation through which "normal patterns of life can be salvaged—and usefulness and self-respect maintained", a need to expand the horizons of older people, and to make them feel that they are still a part of their community. This concept far exceeds the definition of geriatrics (Greek, geras—old, atrikos—healing), as "that department of medicine which deals with old age and its diseases". It is concerned with persons as well as with disease; with persons who are aging normally, but also who are suffering physical or mental disabilities which frequently bring on premature old age.

The great advances of medical science within the past half-century have produced an aging population. Two thousand years ago, the average length of life was 25 years; at the turn of the century it was 49 years; recently compiled mortality statistics show that the average length of life in the United States has increased to 67.2 years. It is estimated that by 1980, 36% of the total population will be over 45 years of age, thus creating not only a medical, but also a social and economic problem as well.

Aging is accompanied by such degenerative conditions as arteriosclerosis, cerebral thrombosis, cardiovascular disease, osteoarthritis, impairment of vision and hearing, as well as many chronic conditions which started earlier in life. Equally distressing is the emotional insecurity experienced by the individual himself, who feels unwanted, neglected; his former social contacts and work associates lost, and his presence merely tolerated because of his age. The greatest impasse to be overcome is the acceptance of being in the older age group.

It is an established fact that mental tension contributes greatly to poor health. A recent study made of adjustment to retirement indicates "the outstanding factor in personality breakdown in old age to be insecurity", involving not just financial insecurity, but emotional insecurity and fears of the future ahead.

In this great and increasing challenge to the rehabilitation team, physical and occupational therapy play an important role in maintaining the general well-being of the elderly patient and in helping to develop a philosophy and outlook on life by providing incentive for him to continue as a valuable self-respected member of society.

The many and varied degenerative conditions of old age, as mentioned previously, can be aided greatly by the physiotherapist. The crippling deformities of osteo-arthritis and hemiplegia

can be arrested or diminished through graded exercise programmes and proper splinting and bracing. Hypostatic pneumonia, so often a "killer" of the bedridden elderly patient, can be prevented by encouraging active deep breathing exercises to expand the lung bases and prevent the collection of fluid in the alveoli and collapse of the lung. The general musculature and muscle tone in the extremities of the elderly lady who has fallen and fractured her hip, can be maintained through active exercises and she will be taught to walk again with the help of canes. The treatment media employed by the physiotherapist are invaluable in restoring full function to joints stiffened by arthritis and disuse. She must not lose sight of the patient as an individual, as one who needs and thrives on constant, sincere encouragement and reassurance; she should give a little more of her time each day to the elderly patient and, in so doing, stimulate initiative and the will to live a happy life of self-reliance.

The first and most important purpose of occupational therapy in the geriatric field is to retain or redevelop the patient's capacity and will to meet the daily demands of living. The hemiplegic for example, will no longer perform with the speed, the efficiency, or the assurance that he did before his illness, but encouragement to continue to care for himself, to accomplish even small duties or tasks, represents the difference between independence and self-respect, and dependence and uselessness. In addition to self-help retraining, manual occupations, including the wide variety of specifically selected crafts, provide more sustained use of the disabled part. A sense of mutual satisfaction and accomplishment is created in the patient by the completion of a project. Remedial games, such as shuffleboard, and gardening, provide a controlled media which encourages physical activity within the medically prescribed limits, while social activities through group participation provide the balance of work and recreation desirable to normal living.

*Case*

Mrs. B. is a 68-year-old woman, a widow, with one son who married a year prior to the patient's admission to a continued treatment hospital. When her son was 16 years of age, Mrs. B. had obtained work cleaning in an office building. For the past eight years she has suffered from osteo-arthritis in both knees, and limitation of movement, muscle weakness and pain had progressed to the point that a year ago she had to give up work. For the past six months she has had increased difficulty in looking after herself alone. Her son and his wife, who is also working, cannot look after her unless she is able to care for her personal needs.

*Physical Therapy*

Much can be accomplished for Mrs. B. to relieve the pain present, reduce muscle spasm that prevents full range of motion in the knee joints, and strengthen weakened muscles in the area. Her treatment programme would include the use of infra-red or short-wave applications to the knee joints, which would increase the circulation to the area and produce a counter-irritant effect to relieve the pain. The products of inflammation are carried away by the increased localized blood flow, a greater exchange of gases in the tissues takes place, and nutrition to the joints thus improved. Relaxation around the joints is encouraged to help reduce the muscle spasm present; this is followed by deep massage and gentle, passive stretching of tightened soft tissue structures. Mrs. B. is given a series of graded, active non-weight-bearing exercises, involving specifically the quadriceps, hamstrings,

gluteus maximus, and tensor fasciae latae to strengthen and thus protect the knee joint against further trauma. Poor posture can result in increased trauma to the weakened knee joints and the re-training of the postural sense is stressed with this patient, so that she can maintain postures that will enable her to carry out the functions of daily living without strain and which she will utilize in taking part in an occupational therapy programme.

*Occupational Therapy*

This patient represents a typical geriatric problem: medical, social, economic. The occupational therapist's first goal is obviously to help Mrs. B. to carry out, independently, activities of daily living. In dressing herself, her chief problem is putting on her shoes and stockings, and in stooping to reach articles on the floor, on low shelves, or drawers. She will be trained to use assistive devices for these skills, and provided with a long "Gripper" to increase her reach. With the co-operation of the ward nurse, she will be encouraged to dress and undress herself at her own speed of accomplishment. To supplement both her self-help programme and non-weight-bearing exercises carried out in physical therapy, she joins a group in the occupational therapy workshop in the afternoon, where she weaves on a foot loom to give graded resistance to knee flexion and extension.

Secondly, we will suggest to Mrs. B. that she might share in housekeeping tasks provided she do so with the minimum of weight bearing. Thus she can not only lessen the burden on her daughter-in-law, but also will retain her own self-esteem and usefulness. Therefore, she will be given experience in the Disabled Homemakers' Kitchen Unit of the Occupational Therapy Department, where she can sit on a high stool and prepare vegetables, bake, wash dishes, or iron.

When our patient has demonstrated a satisfactory achievement and a measure of self-confidence, the therapist will visit the daughter-in-law, and, if necessary, suggest ways in which Mrs. B. can be helped to carry on at home.

While this case has included only limited reference to the specific use of social and manual activities, including crafts, both of these areas are extremely important. It has been shown that imagination and creative ability decline comparatively little in the later years of life and it is here that visible accomplishment in manual occupations demonstrates practical useful achievement and a needed sense of mental satisfaction to the elderly patient.

Thus the ever-expanding field of geriatrics proves an exciting challenge to the physical and occupational therapist and one where she will gain great personal satisfaction and sense of achievement. To quote, in conclusion, from Trevor H. Howell, M.R.C.P. (Ed.), St. Bartholomew's Hospital, London, England: "Rehabilitation consists of finding a life fit for the patient quite as much as making the patient fit for life outside hospital or bedroom". And finally, Dr. William F. King writes: "The beginning of the nineteenth century ushered in the era of the Rights of Man—the twentieth century ushered in the era of the Rights of the Child. We have now come to the era of the Rights of the Aging and the Aged."

References

Murphy: American Journal of Occupational Therapy, 3: 3.

Willard and Spackman: Principles of Occupational Therapy (second edition).

Archives of Physical Medicine; December, 1948 (Geriatric Rehabilitation).

Krusen: Physical Medicine and Rehabilitation for the Clinician.

# WHAT IS PSYCHOTHERAPY?

DANIEL CAPPON, M.B., M.R.C.P., D.P.M.

(Based on lectures delivered to undergraduates and graduate students in the Department of Psychiatry, Faculty of Medicine, University of Toronto.)

"Can'st thou not minister to a mind diseased,
Pluck from the memory a rooted sorrow,
Raze out the rooted trouble of the brain,
And with some sweet oblivious antidote
Cleanse the stuffed bosom of that perilous stuff
Which weighs upon the heart?"

(Macbeth)

AND if such mighty deeds can be done, how are they done? And if they are done, how can one man teach them to another? These are the questions. There are some who still do not believe that human beings can change in personality any more than leopards can change their spots. But no one denies that symptoms of emotional upset can be modified or remitted. Since the dawn of civilization, witch doctors, magicians and priests and kings with their laying on of the hand, have been crude but successful psychotherapists. Also, since the beginning of man, shrines and temples, dedicated to Aesculapius or other deities, and miracle centres, whether at Lourdres or on the banks of the Ganges, have had, and still have, curative effects on those primarily sick in mind. A western-trained African negro doctor reported to the World Mental Health Conference in Toronto that witch doctors are still the only effective psychotherapists for the African negroes, but that there is a new advance: the witch doctors themselves know enough now to come to him for electroshocking their depressions, thus now he controls ultimately the entire dominion of African psychotherapy!

On the other hand, these elemental means of effecting changes in a person are rather unreliable, and the "vix mendicatrix naturae" leaves much to be desired. In a study of "non-psychiatric" patients dying in a general hospital I was much struck by the fact that 75% of the patients actually did have psychiatric disorders most of their lives and that the certain approach of death did nothing to change their faulty reaction patterns. They all took their sick psyches to their graves, and most of them were secretly relieved that there would soon be an ending. Yet in other instances, severe intercurrent infections or other somatic disease often remits the psychiatric condition.

If I am not to be lost in polemics; if I am to communicate something useful, I must begin with two categorical assertions:

1. It is entirely possible to relieve and remit symptoms by altering their underlying personality "causes".
2. It is possible to do this in a purposeful, methodical fashion, with predictable success.

I shall now extend myself over three articles to modify these statements and point out what is known, what can be done, and what is not known and cannot yet be done.

## DEFINITIONS

In this field of communications regarding mental phenomena, I must make a fundamental distinction between

what happens—what is actually experienced and *felt*, and what one thinks has happened and subsequently what one says about it. Words, fine and uniquely intelligent human means of communication though they be, can at best define *concepts*. They fail to communicate fully the emotional facts of *experience*. I shall attempt, throughout these writings, to distinguish between these orders of phenomena. Clearly, all definitions are merely conceptual. Psychotherapy has protean definitions. Among these are: "Phantasies are the means whereby a neurotic builds castles in the air, delusions the means whereby a psychotic lives in them, and psychotherapy the means whereby the psychiatrist collects the rent!" One might substitute, "a doctor" for psychiatrist, because I suspect that much more than half of every doctor's income derives directly or indirectly from medical interference in psychiatric disorders.

Another definition: "Psychotherapy is any process that leads to the establishment of insight"—and "insight" is any process in which the patient professes acceptance of the current formulations of his therapist.

Psychotherapy is a specialized treatment of mental upsets and disorders entirely carried out by psychological means. It is based on the premise that since psychologic illness is primarily psychologically induced—by the impact of relationships between man and man—it ought to be primarily psychologically reduced, essentially by the same kind of means. The doctor, or therapist, interposes himself in the interplay of dynamic forces within and outside the patient. (1) The therapist's aim is to so help the patient recognize these forces as to modify the patient's reactions to them and thus ameliorate symptoms and correct their underlying personality flaws. In its larger and social aspects (2) it may be a broader enterprise than the treatment of troubled people. It may provide the best opportunity through which some individuals appreciate how traditions, values and institutions of a society function through their interplay with a person's own inner mental workings. As a form of experience, in proper hands, psychotherapy is a unique one: revelatory, involving the depths of one's feelings, stirring, often comforting, and always difficult. It has two main stumbling blocks: the patient and the doctor.

It remains to distinguish between these two people, by defining the role and function of each in turn. Because of the fantastic incidence of psychiatric disorder (the latest figure is one psychiatric case in 15 "normals", but some of my researches in the wards of a general hospital have reversed this ratio!); because of the all-pervasiveness of emotional upsets, transient and chronic, minor and major; because of the generality, multiplicity and probably increase of psychologic threats (if for no other reason than that there are more people in a shrinking world than ever before), it is impossible to clearly distinguish the patient from the non-patient. Or for that matter, on those grounds, it is difficult to tell a patient from a doctor—any doctor. Arbitrarily, one must say that the only certain definition is that a patient is a person who comes for help with a problem in living; and the doctor is the person to whom the patient comes.

From sample studies of the "general population", of what used to be "psychiatric controls" and of the population of patients in general hospitals, it may be said that those patients who come voluntarily, and rather bravely for psychotherapy, are in a better mental state ("more insight") and have a better chance of less internal strife, and more capacity for love and happiness at the

end of a successful therapeutic process, than many non-patients, who regard themselves, and sometimes are regarded by some, as healthy. Of course, this large statement would be absurd if carried to its logical conclusion, and lead to a ludierous but not unimaginable situation where everybody in the world would be analysing everybody else.

Meanwhile, let us note that there is a very important self-selection, of both patient and therapist; that this is a "silent" process, antedating psychotherapy, i.e. not often talked about and difficult to study. Thus one might say that out of the continuum of stress and struggle that is life (a struggle to keep money coming in and teeth from falling out), at a particular phase of diseomfort for a person, he elects to present himself to a therapist (who, out of the same general matrix of life has already undergone a process electing to become a therapist), and when the two meet, psychotherapy begins. When they separate, psychotherapy ends. But a great deal of significance to the illness of a person, to his choosing to declare himself a patient, to his coming and staying in therapy, and to his success and failure—with a parallel process for the therapist—happens before, and continues to happen after the formal process of psychotherapy.

### CHARACTERISTICS OF THE PROCESS OF PSYCHOTHERAPY

1. It has an aim or goal. Broadly this is either the palliation of symptoms or the more radical attempt to alter the underlying personality structure. To determine this the first step is "adequate" diagnosis, the next is diagnosis and the third is diagnosis also! This means not merely a classification, but a mutual formulation, with the patient, of the dynamics of his illness. Palliative treatment is termed "supportive" and radieal treatment is called "integrative".

2. In terms of time, it has three phases: initiating, maintaining and ending treatment.

3. In terms of number of patients to be treated, and techniques to be enumerated in a subsequent article, therapy could be individual or group, directive or non-directive, etc.

4. In terms of stages of the "integrative" process, there are four:

(a) Analysis
(b) Synthesis
(c) Integration
(d) Re-edueation

By analysis, one means the patient, systematic and complete gathering of conscious and "unconscious" mental data. By synthesis, one means sifting this data and outlining the important psychopathological facts. By integration, one means allowing the new knowledge to be intellectually and emotionally absorbed and rearranged within the personality of the patient. By re-education one means applying these new aspects of the inner self in actual, outward behavioural life. This will be seen then by others as a change. Obviously, it is the last two steps which take the time: months, years or never. These are the despair of the psychiatrist, who can "lead the horse to water but can't make him drink", and which perhaps justly drain some of the financial resources of the recalcitrant patient who "refuses to be cured". It must be stated emphatically, however, that at all these stages, there is a mutuality of exchange and decision-making. The patient should not be passive, nor the psychiatrist merely talk and tell him.

5. In terms of experience, there are the stages of:

(a) Establishing rapport: a bond of liking and understanding and confidence, strengthened by the emotional experience of confiding (and abreacting) and finding oneself accepted

uncritically and unconditionally (except for a modest fee).

(b) Establishing and living through transference: a curious and always "pathological" situation wherein the patient transfers on to the therapist his main faulty thoughts and feelings and "relives" the emotional traumata of the past, in the somewhat abbreviated 50-minute hour, in the therapy room.

(c) Breaking transference: an always partly regrettable, lingering experience, when something which was deeply meaningful, which was at last partly found, is finally lost. The grief of this parting which makes it a sweet sorrow, is much diminished by transferring and distributing more healthily the feelings hitherto bound up in the neurosis, and then projected on the therapist, and displacing them once again, this time outside, in outer life, and to good, constructive purpose.

Paradoxically, though the relationship above depicted may be idyllic and the process carried to a happy ending, there is much inevitable "subconscious" divergence and antagonism between doctor and patient, and never a complete coincidence of ultimate goals. Apparently they both have a common purpose bringing them together: one to be healed and the other to heal. Yet at a deeper level, the patient wishes the alleviation of symptoms, especially the painful ones like anxiety, but is resistant to changing those parts of himself which *make* those symptoms. If this is overcome, and the analytic phase successfully penetrates the layers of the mind, an impasse may be reached in which the patient is unwilling to make a choice. For instance, a thanatophobic, chronically anxious 30-year-old English-Canadian mother of two children revealed her essential ambivalence on her own tyrannical, neurotic, hypochondriacal mother. On the one hand, she wished her mother dead and out of the way so she could lead her own adult life; on the other hand, she had a life-long dependency on her mother, as a child an intense fear of mother abandoning her, and ever since, a guilt about her own murderous feeling towards her mother. She also wondered how it would be if her own children felt this way towards herself. In this quandary, if she could not rid herself of her mother, it might be better to rid mother of her. In death perhaps all would be forgotten. But she was an attractive, vigorous young woman, and the larger part of her did not want to die. Besides, she had had no more experience of death than any other human being, so she could not be certain that it would be a solution. This mental teeter-totter led her to a most morbid fascination with death, and a mortal "irrational" fear of it. Trapped, as all neurotic people are inwardly, between Scylla and Charybdis, how could she solve this riddle emotionally.

Then, a choice is delayed by the lulling, comforting situation of therapy itself. No need to integrate and re-educate in real living. Nicer to prolong this state. (One can see here the important limit on this situation which even a lean fee imposes).

Some patients and, alas, therapists are so pleasantly cruising submerged in the oceanic depth of the unconscious, oblivious of outer reality, except for a throatful of air, that this condition has been irreverently termed "status snorkelis".

Last but not least, the patient cannot or will not give up symptoms which fulfil one or two important functions: those which have manifest, palpable secondary gains through which they control the lives of generations—like poor grandmother's 75-year-old bad heart, bad for 55 of those years—or those symp-

toms which perhaps, at the same time, expiate feelings of unforgiveable guilt.

In ultimate analysis, all truly painful mental symptoms are given by the self to the self (there are no outside directly noxious agents). In many a therapeutic situation, even if the patient is brought to a happy state when he can forgive all others and all else—even the wretched parents who were forgiven for they knew not what they did—he cannot forgive himself. Probably as the existentialists say, there is no greater reality than sin; and certainly as the abundance of tragedies (as opposed to comedies) testify, and as every therapist finds, there is no greater inner reality than the guilt of an offended, cruel conscience.

Consider the case of a woman who felt she had emasculated her husband and aborted on purpose (killed) his offspring in her womb as a revenge against all men, and her father and uncle in particular, who partly seduced her physically, but ignored her emotionally. Though unaided by the true Christianity that teaches love and forgiveness, she managed to forgive others, but she continued to dig her nails in her own flesh, abuse her gastro-intestinal tract, put herself in the way of infection and accidents (with relief when they occurred) and do all she could to get rejected and hurt by others, because she could not eradicate the memory of what she did, or wanted to do to her own unborn children.

Content analysis of a successful process of psychotherapy [4] shows that there is an increase in insightful (subjective) statements, more maturity of reported behaviour, more positive attitudes, a change in perception of the self and an increase in acceptance of one's shortcomings, an incorporation of previously denied experience, a shift in the acknowledged locus of "pathology" from the outside world (projection) to the inside world (introjection), a progressive change in therapeutic (patient-doctor) relationship, and a change in some personality characteristics. Ultimately libido (mental energy) is freed from its concentration in the illness and symptom production (complex) and distributed, partly sublimated, in constructive undertakings (i.e. rearing and loving, and accessory endeavours).

Man's ultimate defenses, his "Ur" delusions, namely, that of invulnerability and immortality, that of omnipotence, directly or through an omnipotent servant (father, doctor, or the good genii) and the final delusion of man's kindness to man, are never shattered, but always usefully modified.

All in all, the skeptical cynic might ask and reply:

> —"But what really does happen in psychotherapy?"
>
> —"Well, some people get better and some don't."
>
> —"What's the real problem?"
>
> —"Well there is no problem when a patient fails to get better: it is always his fault. The puzzle is when he does get better, because it is so difficult to know what made him do it."

NOTE: The final article will contain a select bibliography.

# SCHIZOPHRENIA

P. C. S. HOAKEN, 5T7

DESCRIPTION

FOR the sake of brevity, this article is entitled simply "Schizophrenia". However, even to those who have had but a passing acquaintance with psychiatry, it is evident that to attempt to describe this disease adequately in an article of this size is useless, and possibly misleading. This article attempts to describe the disease briefly, and to outline certain problems encountered in the study of schizophrenia as a disease entity, and as a public health problem, in the hope that both undergraduates and graduates will better realize the seriousness of this syndrome.

According to Noyes, although it is relatively easy to describe some of the more striking characteristics of schizophrenia, no definition of this mental illness has yet received universal assent. Aubrey Lewis believes that what is common to all forms of the disease is a detachment from the world without, and a breaking up of normal psychological connections within. He goes on to say that the personality is not integrated; that thinking, emotion, and conduct are discrepant and morbid. In the early stages of the disease, adjustment to situations in the outer world is inadequate, resulting in a withdrawal into autism, a mental state which is controlled by the wishes of the individual rather than by conditions imposed by the real nature of objects and events. Delusional preoccupation is consistent with such a state. In time, these maladjustive processes lead to disorganization of the personality with impairment in the evaluation of reality.

Schizophrenia has been subclassified as to reaction type. The diagnosis of type in any particular patient means simply that the symptoms and signs classified under that type are the most prominent in the patient concerned. Boundary lines between types are certainly not well defined, and patients diagnosed as "mixed type", those in which there is no predominance of signs to indicate a specific type, are not uncommon. In any particular patient, Noyes believes that more understanding is to be gained by studying the patient and his life history as an individual problem rather than as a representative of some classificatory division.

The following classification of types is based on Kraeplin's attempt to divide schizophrenia into varieties according to predominant symptomatology:

1. *Simple type*

Characteristic of this type is a defect of interest, ambition, and emotion, usually developing in late adolescence or early adulthood. Hallucinations and delusions do not play an important role. The patient shows a gradual development of apathetic disinterest in his environment and future. From a useful member of society he becomes an habitually unemployed idler, a tramp, or a vagrant.

2. *Hebephrenic type*

This type is characterized by the insidious onset during early adolescence of silliness, and inappropriate and shallow affect. Hallucinations, usually auditory, are common, as are delusions which are fantastic and bizarre, in contradistinction to the elaborate systematized delusions of the paranoid type. There seems to be a true dissociation of

thought: e.g., answers are irrelevant, speech often becomes incoherent, and neologisms are invented. Some patients show childish mannerisms; others, in a more regressed stage, wet and soil. This type, likely more than any other, leads to a final, severe disorganization of personality.

3. *Catatonic type*

Catatonic excitement and catatonic stupor are the two described phases of this type of schizophrenia, but patients are often seen in stages between these two extremes. It is most frequently seen between the ages of fifteen and twenty-five (Noyes), and is usually of an acute onset following an emotionally disturbing experience.

The patient in the stuporous phase shows failing interest in his environment and preoccupation, progressing to muteness and immobility in the extreme cases. In catatonic excitement there is an excess of unorganized, purposeless, stereotyped, and frequently destructive and assaultive motor activity. There is little, if any, emotional expression during the excitement phase. The patient may retain the muteness of the stupor, or be overproductive of speech, the thought content of which shows a flight of ideas.

4. *Paranoid type*

This type occurs most frequently in the thirty to thirty-five age group. An important feature of paranoid schizophrenia is the well organized delusional system in which the patient is the object of persecution from other members of society. Wish-fulfilling and hypochondriacal delusions are sometimes present as well. Ideas of reference and bizarre interpretations of commonplace occurrences are commonly among the first signs of the disease, followed by delusions which usually become more elaborate as the condition progresses. Many patients become resentful, suspicious, and hostile. It is not unusual for paranoids to develop delusions of grandeur. These, like persecutory delusions, are part of the defensive type of reaction. Auditory hallucinations are quite common, the voices being threatening, accusing, or insulting.

5. *Schizo-affective type*

Noyes lists this type as a syndrome which combines the bizarre behaviour and thought of schizophrenia with the pronounced swings of mood—euphoria or depression—of affective reactions. Other types of the disease are notable for their paucity of affect.

6. *Pseudoneurotic type*

The pseudoneurotic schizophrenic usually presents much like a psychoneurotic. However, his hysterical or hypochondriacal symptoms are severe enough to be considered delusional. The neurotic manifestations shift but are not relieved by any therapy; the patient's anxiety becomes worse and worse. Brief psychotic episodes sometimes occur.

A PUBLIC HEALTH PROBLEM

Man is best differentiated from other members of the animal kingdom not by any uniqueness of his anatomy of physiology, but rather by his ability to form symbols and to use these symbols to communicate with his fellows. From this ability spring rational thought and our complex social existence. The predominant feature of schizophrenia is not the organic changes which are a part of it, or any demonstrable pathology, but rather the functional breakdown in the patient. The important fact is that a previously healthy, normal, individual has had a breakdown in living. He no longer enjoys normal interpersonal relationships. He can no longer think rationally, display the appropriate emotions, or behave in a socially acceptable manner. This change, just as much as any organic illness, is disease.

Unfortunately, schizophrenia is not a rare disease. The Seventeenth Annual Report of Mental Institutions (Dominion Bureau of Statistics) listed it as the most common diagnosis among psychotic patients on first admission to mental hospitals (27.9% of psychotic first admissions). Noyes estimates that it constitutes between 15 and 20% of all first admissions to public mental hospitals in the U.S. It affects almost 1% of the American population. Those who are treated in hospital have lost their positions as useful, contributing members of society. Millions of dollars are spent annually for their care, treatment, and rehabilitation. There is some satisfaction if a patient in the acute phase can, with intensive treatment, be improved sufficiently to allow his discharge from hospital. But an estimated 40 to 60% of schizophrenics become chronic patients despite all available forms of therapy, and remain institutionalized until they die, or have a stormy course of remissions and relapses.

There are, very likely, many schizophrenics outside hospital who are cared for privately, or who drift around in society, forming part of a large, asocial group of vagrants, prostitutes, drug-addicts, and criminals. The misunderstood, lonely, hostile, suspicious and withdrawn schizophrenic in society presents just as great a problem as does the institutionalized patient.

Although schizophrenia is primarily a functional disease, there are associated organic features which are, nevertheless, part of the problem. Instability of the autonomic nervous system is thought to be responsible for cold, cyanosed extremities often seen in schizophrenics. Prolonged catatonic postures can lead to changes in circulation, oedema, and permanent muscle contractures. Inactivity and poor appetite in chronic patients often leads to malnutrition, which, associated with other factors found in mental institutions accounts for the relatively high rate of pulmonary tuberculosis. Traumatic lesions, the result of falls from vertigo or epileptiform seizures, or the result of the patient's own self-destructive tendencies, are not uncommon in chronic institutionalized schizophrenics.

### A PROBLEM IN DIAGNOSIS

In a democratic society, freedom of the individual and eccentricity of behaviour are cherished in theory if not always in practice. Therefore, it is of considerable importance that what is pathological be distinguished from benign eccentricity by the physician responsible for the diagnosis of schizophrenia. With the occurrence of the gross changes associated with the disease, such as delusions, hallucinations, ideas of reference, and inappropriateness of affect, it is relatively easy to make a diagnosis; however, the insidious minor changes of personality and behaviour which precede these are often difficult for the general physician to detect. It is in the early stage that treatment should be initiated because of the progressive nature of the disease. The primary characteristic defects to look for in a psychiatric examination are: inconsistencies in behaviour, thought, and emotions, discrepancy between mood and utterance, excessive daydreaming, and failure to concentrate.

Among mental diseases there is sometimes difficulty in differentiating schizophrenia from a manic-depressive psychosis, or, more uncommonly, an organic psychosis; and Noyes believes that it is doubtful if there is any definite demarcation between psychoneurotic and schizophrenic reactions. Other writers, however, believe that psychoneuroses and psychoses are distinct entities. There is a striking similarity be-

tween simple schizophrenics and some psychopaths, although the latter tend to excessive rationalization; whereas simple schizophrenics accept their lot quite gracefully.

It is in the diagnosis of reactive type that the chief problem lies. It is uncommon to see a clearly defined paranoid, hebephrenic, etc., without some characteristics of another type. It is more important to understand the individual patient and his particular problems than to be concerned with classification. Some psychiatrists are so little concerned with classification that they state that there are as many types of schizophrenia as there are patients suffering from the disease. Besides the clinical impression of the patient, projective psychological tests are used to gain further insight into his problems.

## A PROBLEM IN ETIOLOGY AND PATHOGENESIS

Until recently, the main trend of psychiatric opinion as to the cause of schizophrenia has been toward a defect in personality development. Recently, however, there has been more emphasis on the role of somatic factors in the etiology. Whether these factors are causes or accompaniments of the disease has not been settled, but the mere presence of organic factors shows that schizophrenia is a disease of the whole person, not just a disease of the mind.

### 1. *Heredity*

There is strong evidence that supports the existence of a genetic factor in some cases of schizophrenia. Stern says that elaborate statistical analyses of data on schizophrenia have suggested a recessive inheritance, and that some authors believe that a single gene difference is involved. In a large series of schizophrenics investigated in Germany by Luxenburger in 1937, the following probability of the disease was noted:

| *Relation to Propositus* | *Probability of Schizophrenia* |
|---|---|
| Unrelated | 0.85% |
| Sibs | 10.8% |
| Children | 16.4% |
| Grandchildren | 3.0% |
| Cousins | 1.8% |
| Nephews, nieces | 1.8% |

In twin studies in Germany and the U.S., the concordance for schizophrenia in identical twins was found to be 68%; whereas in unlike twins, the concordance was only 11% (which compares with percentage for sibs in table above). Similarity of early environment cannot be overlooked as a factor in these cases, but it should not account for the markedly higher concordance among identical twins. F. J. Kallman, who believes that a true schizophrenic psychosis cannot develop without an inherited predisposition, reported a case of identical twins, adopted into different families soon after birth, who developed schizophrenia within a year and a half of each other.

In Scandinavia, it is generally accepted that there is a common hereditary factor whose presence is necessary for the development of the disease. In some cases this factor may be necessary to make the disease manifest itself, but in many cases, one or more releasing factors are required to provoke the disease; i.e., the presence of the genetic factor and the occurrence of the disease do not have a one to one correlation.

### 2. *Body type*

Schizophrenia is supposed to be more prevalent among those of leptosomatic or ectomorphic body type; or, at least the prepsychotic schizoid personality is frequently seen in this type. It has been observed by some workers that if the patient is of pyknic build, the disease is usually found after forty, that it is slow in development, and that there is usually

no deterioriation of personality; whereas many hebephrenics are leptosomes, and are prone to deteriorate. Catatonia in pyknics has been observed to be mostly periodic between stupor and awareness; whereas in leptosomes, a tendency to prolonged states of stupor or exaltation has been noted. Work by Kline *et al.* (quoted by Faurbye), has shown that many biological factors such as blood albumin and globulin, N.P.N., and cholesteral vary in persons of different body habitus. This evidence may be related to the predominance of the disease in one body type.

3. *Nervous factors*

From studies of their own and from those of other workers, Douglas and Hoch conclude that schizophrenics as a group show a hyporeaction to most pharmacological stimuli, but that as a group, they show a diffuse intragroup variability in reaction to most stimuli, even greater than among normals.

It has already been mentioned that schizophrenics are often afflicted with an instability of the autonomic nervous system, producing a defect of sympathetic reaction. Some authors have observed that the power of sympathetic reaction improves with the clinical improvement of the patient.

According to Cannon, the normal mechanisms of emotional expression begins when some experience affects the senses. Impulses are relayed via the hypothalamus and autonomic nervous system to smooth muscle and endocrine glands. However, with every experience, there is a conscious emotional component reaching the cortex via the hypothalamus. Changes in emotional life, either blunting or inappropriateness, are a characteristic trait of schizophrenia. Thus it seems, according to some workers in the field, that there is a disturbance of hypothalamic function manifesting itself in both the autonomic and conceptual sides of emotion.

4. *Endocrine factors*

Because of the high incidence of the disease during puberty and the climacterium, endocrine factors have been sought as etiological agents, although it seems reasonable that the psychological changes occurring at these times could also be factors. Schizophrenics tested under standard conditions were found to secrete more 17-ketosteroids and less cortin in the urine than normal controls. Also, a reduced adrenal cortex reaction to stress was observed. Deviation of thyroid function was noted in a considerable proportion of schizophrenics in one series. One-half of those patients who had B.M.R.s between 70 and 80% were "cured" or improved greatly after treatment with large doses of thyroid for six months to a year. Another investigator found the symptoms of schizophrenia much like the psychical symptoms of oxygen deficiency. On the basis of the following findings in patients: (a) normal oxygen pressure in blood; (b) reduced oxygen consumption; (c) imperfect effect of thyroid; he concluded that there must be a defective enzyme system in the tissues of schizophrenics so that the cells cannot utilize the oxygen found in the blood. Oxygen deficiency arising in the cerebral cells produces the psychical symptoms. Others have found no correlation between the disease and thyroid function.

5. *Biochemical factors*

As early as 1937, a German research worker, P. J. Reiter, reasoned that if toxic substances in the blood were involved directly or indirectly in the etiology of schizophrenia, replacement transfusions with blood of healthy, normal subjects should result in detoxification and improvement. Replacement

transfusions which he performed on four patients brought about remarkable, though transitory, improvement in three.

Numerous other experiments have been done to show that there are factors in the blood and C.S.F. of schizophrenic patients that are toxic to living organisms. Fedoroff used strain L mouse subcutaneous tissue cells in tissue culture, and strain HeLa cells from carcinoma of the cervix in another tissue culture. He found that in most cases, schizophrenic blood serum differs from the blood serum of healthy persons in its effect on strain L cells, being toxic to these, but not toxic to strain HeLa cells. Questions immediately posed by this finding are: in what way is it toxic, and is the effect specific for schizophrenic blood serum?

6. *Psychic factors*

It is often found that the prepsychotic personality of the schizophrenic has many of the schizoid features described by Bleuler. Some of these characteristics are sensitiveness in some situations, but dullness or coldness in others; shyness, loneliness and lack of sociability. Precipitating factors are found in faulty adjustment to life situations with an increasing use of substitutive reactions instead of ones effective in dealing with these situations. The result is a gradual substitution of an inner life for outside reality.

## THE PROBLEM OF TREATMENT AND REHABILITATION

The problem of treatment resolves itself into five parts: (1) Preventive therapy, (2) physical methods of therapy, (3) drug treatment, (4) psychotherapy, (5) surgery.

1. *Preventive*

Out of the many aspects of the disease the psychological explanation of schizophrenia provides the greatest scope for preventive therapy. The growth of modern mental health clinics, child guidance centres, and the institution of school and industrial psychiatrists are all aimed at preventing the development of gross psychotic breaks with reality and the relatively poor prognosis which accompanies them.

2. *Physical*

Both electro-convulsive therapy (E.C.T.) and insulin coma therapy (I.C.T.) are empirical forms of treatment. It is not well understood how they work. These methods are used less now because of the widespread use of Chlorpromazine and Reserpine. The indications for I.C.T. are paranoid or catatonic types of disease that have been in existence for six months or less. The percentage of relapses is high. E.C.T. is also useful for the acute paranoid patient, and is very effective in breaking up catatonic excitements and stupors. Hoenig *et al.*, reporting on the outcome of the illness at the time of discharge from hospital of two groups of schizophrenics (one before the use of E.C.T. and I.C.T., and the other after), concluded that the test group did better as a whole than the control group, but that further analysis suggested that factors other than the physical methods of treatment may have been concerned. The question of the effectiveness of these forms of therapy has not been settled.

3. *Drug Treatment*

Drug therapy is the newest form of treatment for schizophrenic patients. The widespread use of Chlorpromazine, Reserpine and other ataractics has increased the discharge rate in mental hospitals, calmed unruly patients, simplified the nursing problem formerly presented by the chronic, agitated, schizophrenic, and in rare cases has brought the deteriorated patient back to reality.

McDonald *et al.*, reporting on behavioural changes of chronic patients in response to Reserpine, found not only a quieting and calming effect, but also consistent improvement in the areas of contact span and accessibility.

Numerous papers have been written on the salutary effect of Chlorpromazine in relieving the anxious schizophrenic, in allowing verbalization of inner conflicts, and in promoting psychotherapeutic rapport.

4. *Psychotherapy*

This may be used alone, or in combination with E.C.T., I.C.T. or drug therapy. It may vary from simple supportive therapy to a modified psychoanalysis. Whatever the method, it is most important that an empathic relationship develop between the patient and practitioner. Sometimes, in order to break down the defenses of the patient, the therapist is forced to fill a number of different roles.

5. *Psychosurgery*

This form of treatment (prefrontal lobotomy) is usually considered a last resort, but it should be used before deterioration is far advanced. Noyes believes it should be considered after a year of other intensive treatment without results. In recent years, the number of lobotomies has fallen because of the use of large doses of Chlorpromazine which are thought to act as a chemical lobotomy, blocking off the frontal lobes.

Rehabilitation of the schizophrenic is a whole problem by itself, and it is difficult to say where formal treatment ends and where rehabilitation begins. In the hospital setting there should be a wide variety of activities for patients who are in sufficient touch with reality to benefit from them. These activities should be group endeavours whenever possible: dancing, dramatics, sports, and similar co-operative ventures. In this category comes group psychotherapy. A group of patients supervised by a psychiatrist discusses the problems of an individual member of the group, and in this way, the separate members are supposed to gain some insight into their individual problems. Outside the hospital, family care programmes aid in preparing the patient for his return to society. Recently, the whole rationale of hospital treatment and care has been challenged. Some psychiatrists believe that, if possible, schizophrenics should be treated in society, attending an outpatient clinic for physical and supportive therapy daily.

Many combinations of physical and pharmacological treatment, psychotherapy, and rehabilitative measures are available for schizophrenics, yet the statistical fact remains that 40% to 60% of these patients become chronic. Medicine has made great progress since Pinel took the mentally ill out of chains, but there is still a long way to go before the problem of treatment and rehabilitation of schizophrenics is solved. This disease which afflicts almost 1% of our population, has been presented as a series of problems. It is a challenge to all of Medicine to solve these problems. Surely there can be nothing more satisfying than converting a withdrawn, lonely, suspicious and hostile patient from a social debit to a useful and happy member of society.

SUMMARY

Schizophrenia as a disease entity, and the separate reactive types of the disease have been described briefly. The syndrome has been treated as a series of problems: in public health, in diagnosis, in etiology and pathogenesis, and finally as a problem in treatment and rehabilitation.

References

1. Cassirer, Ernst: An Essay on Man.
2. Douglas, D. B., and Hoeh, P. H.: Blood Pressure Studies in Sehizophrenia. Psyehiatrie Quarterly, April, 1956.
3. Faurbye, Arild: Some Somatie Problems in Sehizophrenia. Acta Psychiatrica et Neurologiea Scandinaviea, Vol. 30, No. 5.
4. Fedoroff, Sergey: Toxieity of Schizophrenie Blood Serum in Tissue Culture. Journal of Laboratory and Clinical Medicine, July, 1956.
5. Hoenig, J., *et al.*: Effeet of Insulin Coma and E.C.T. on the short term prognosis of Schizophrenia. Journal of Neurology, Neurosurgery and Psychiatry, Vol. 19, No. 2.
6. Lewis, Aubrey, in Price, Frederick W.: A Textbook of the Praetice of Medicine.
7. McDonald, Roy E., *et al.*: Behavioural Changes of Chronic Sehizophrenics in Response to Reserpine. A.M.A. Archives of Neurology and Psychiatry, Vol. 75, No. 6.
8. Naidoo, D.: The Effects of Reserpine on the Chronic Disturbed Sehizophrenic. The Journal of Nervous and Mental Diseases, Vol. 23, No. 1.
9. Noyes, Arthur P.: Modern Clinical Psychiatry.
10. Stern, Curt: Prineiples of Human Genetics.

# CASE REPORT

SURG. SUBLT. M. A. TYBER, RCN(R)

THAT common things occur most eommonly is an aphorism known to every medical student. The following case history, however, illustrates the fact that unusual conditions may simulate common ones, and that each case must be considered on its own merits.

Edward D., a seventeen-year-old gunner in the R.C.A. was referred to the surgical service of R.C.N. Hospital H.M.C.S. *Stadacona* on June 5, 1956.

## Chief Complaint

Dull periumbilical pain of one month's duration.

## History of Present Illness

This young soldier was in his usual good health until one month before admission when he developed sudden, erampy abdominal pain which was periumbilical in distribution. The pain became less intense, but remained in the same position. He was slightly nauseated, but did not vomit, and he had no diarrhea. He noted, however, a transient dysuria. When seen in hospital, he complained only of dull pain unaffected by meals or alkali and with no definite radiation.

## Past Health and Functional Inquiry

No symptoms of note were elicited other than as above.

## Physical Examination

The patient was a well developed male in no apparent distress. Temperature 100; pulse 90. The only significant findings were confined to the abdomen where guarding and tenderness were noted in the right lower quadrant, and a moderately firm fusiform mass could be palpated lying about 2.5 inches infero-lateral to the umbilicus on the right side. Rectal examination confirmed the presenee of this mass which was slightly tender to the examining finger.

At this time the laboratory findings included: WBC 9,300, Hgb 14.5 Gm., and urinalysis: 4-6 pus cells/h.p.f.; occasional RBC.

A diagnosis of appendiceal abscess was made, and he was treated with bed

rest, fluid diet and antibiotics. He became afebrile in 48 hours, and the mass began to resolve. He was discharged to sick leave free of symptoms, and booked for an elective appendectomy in one month's time.

When seen again in August, 1956, physical examination showed the mass still present but slightly reduced in size. There was no indication of the abscess pointing or of fistula formation. Laboratory findings at this time were: WBC 6,000, ESR 5mm./hour (Wintrobe), urinalysis: 3-5 pus cells/h.p.f. with occasional RBC's.

The patient accordingly came to operation where the mass was easily palpable through the lax musculature, and and an attempt was made to aspirate material from the abscess with a large bore needle. However, only a small amount of bright red blood could be drawn up into the syringe. Following this, a right paramedian incision was made and a laparotomy performed. This revealed a grossly normal appendix and a retrocecal, retroperitoneal mass which was thought to be kidney. The appendix was removed, the mass was not disturbed, and the wound closed. The postoperative period was uneventful, and the patient made a full recovery.

Four days after operation, an intravenous pyelogram was done. No kidney could be seen on the left side. There appeared to be a double kidney on the right side with failure of rotation suggestive of an ectopic left kidney fused to an abnormally low right kidney. The bladder was filled with the dye indicating good renal function.

At a later date cystoscopic examination was done, and a normal bladder was visualized. The ureters were catheterized, and retrograde pyelograms were made which visualized the left ureter arising in the normal position and passing to the pelvis of the fused ectopic kidney.

Pathological examination of the appendix revealed evidence of a previous inflammation. This is the probable cause of the patient's symptoms as his renal condition in itself would not cause pain. However, there is the possibility that the ectopic kidney may have caused pressure on nerves or interference with peristalsis thereby producing the symptoms.

*Note*

Congenital anomalies are most frequently seen in the genito-urinary system. The great majority of these, however, are asymptomatic and found incidentally at post mortem. If symptoms do develop, approximately one-third will be referred to the gastrointestinal tract.

Summary

A patient with apparent gastrointestinal disease came to operation where an interesting anomaly of kidney was discovered. Microscopic study of the appendix which was removed showed evidence of previous inflammation.

Acknowledgement

The author is indebted to Surgeon Lieutenant G. Flight, R.C.N.(R), for his assistance in the preparation of this case report.

HARD-TO-KILL TRICHOMONADS

# EXPLODE

WITHIN 15 SECONDS' CONTACT
WITH VAGISEC LIQUID

WITH THE Davis technique,† using VAGISEC* liquid and jelly, flare-ups of vaginal trichomoniasis rarely occur. VAGISEC liquid actually explodes trichomonads within 15 seconds after douche contact.[1] Better than 90 per cent apparent cures follow use of this new trichomonacide,[2] developed as "Carlendacide" by Dr. Carl Henry Davis, noted gynecologist and author, and C. G. Grand, research physiologist.[3]

*No trichomonad escapes* — The overwhelming action of VAGISEC liquid dooms the trichomonad. One chelating agent and two surface-acting agents combine in attack to weaken the cell membrane, to remove waxes and lipids, and to denature the protein. With its cell wall destroyed, the parasite imbibes water, swells and explodes. Only scattered fragments remain.

No other agent or combination of agents kills the trichomonad in this specific fashion or with the *speed* of VAGISEC liquid.[3] When the patient uses VAGISEC jelly as well — the recommended routine — these good effects continue indefinitely.[4]

*The Davis technique* — Office therapy with VAGISEC liquid is combined with home treatment. Both liquid and jelly are prescribed.

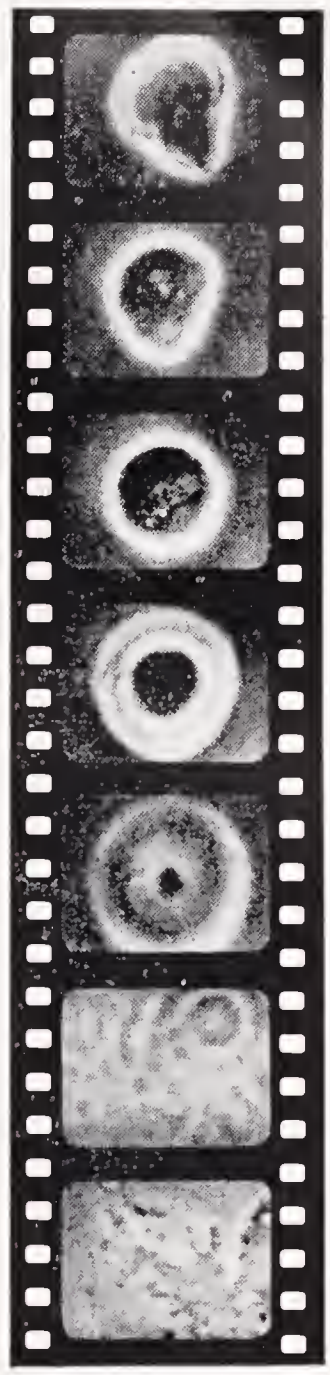
OFFICE TREATMENT — *Wipe vaginal walls dry with cotton balls, then wash thoroughly for about three minutes with a 1:100 dilution of* VAGISEC *liquid. Remove excess fluid with cotton balls. Dr. Davis recommends three treatments the first week, two the second and one the third.*

HOME TREATMENT — *Patient douches with* VAGISEC *liquid every night or morning and then inserts* VAGISEC *jelly. Home treatment is continued through two menstrual periods, but omitted on office treatment days. Douching is contraindicated in pregnancy.*

*Trade-mark †Pat. App. for

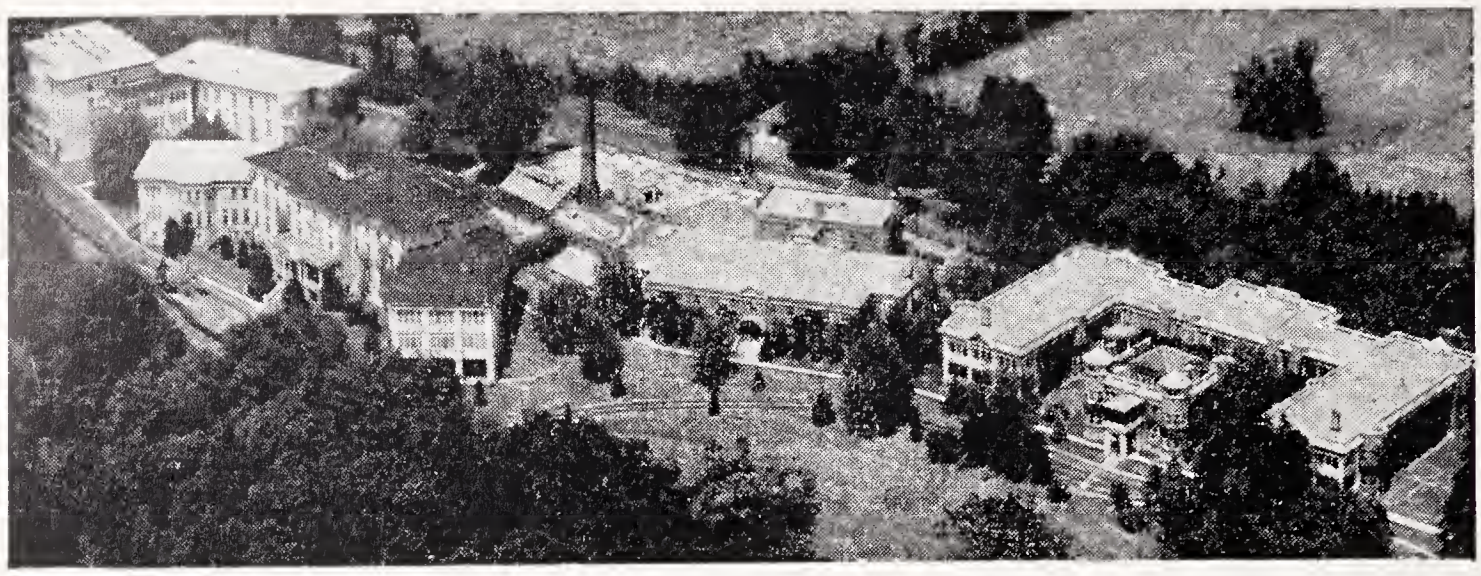
Active ingredients in VAGISEC liquid: Polyoxyethylene nonyl phenol, Sodium ethylene diamine tetra-acetate, Sodium dioctyl sulfosuccinate. In addition, VAGISEC jelly contains Boric acid, Alcohol 5% by weight.

JULIUS SCHMID
(Canada) Ltd.
32 Bermondsey Road
Toronto 16, Canada



*Top to bottom:*
2 sec. CONTACTS
4 sec. COMPLEXES
6 sec. DISSOLVES
8 sec. DENATURES
10 sec. SWELLS
15 sec. EXPLODES
16 sec. SCATTERS

*References:* 1. Davis, C. H.: J. A. M. A. *157*:126 (Jan. 8) 1955. 2. Davis, C. H.: West. J. Surg. *63*:53 (Feb.) 1955. 3. Davis, C. H., and Grand, C. G.: Am. J. Obst. & Gynec. *68*:559 (Aug.) 1954. 4. Davis, C. H. (Ed.): Gynecology and Obstetrics (revision), Hagerstown, Md., W. F. Prior, 1955, vol. 3, chap. 7, pp. 23-33.



# Homewood Sanitarium

A private hospital for the diagnosis, care and treatment of all types of psychiatric disorders. An adequate staff of specialists study each patient carefully and fit the treatment to his individual needs. Excellent cuisine, comfortable accommodation and personal attention of specially trained nursing staff contribute to the recovery of the patient. All types of modern therapy are available, including Psychotherapy, Insulin and Electro-shock, combined with excellent Occupational and Recreational facilities. The Sanitarium buildings, accommodating 225 patients, are situated in a very attractive setting within the confines of the City of Guelph. Patients who are policyholders with the Ontario Blue Cross Plan for Hospital care or Life Insurance Hospitalization schemes are eligible for benefits. Visits by physicians and other interested parties are always welcomed. For further information write or telephone (TA. 4–1010).

***A. L. MacKINNON, M.B., Medical Supt.***

**THE HOMEWOOD SANITARIUM OF GUELPH, ONTARIO, LIMITED**

---

# Dilaudid

Ⓝ

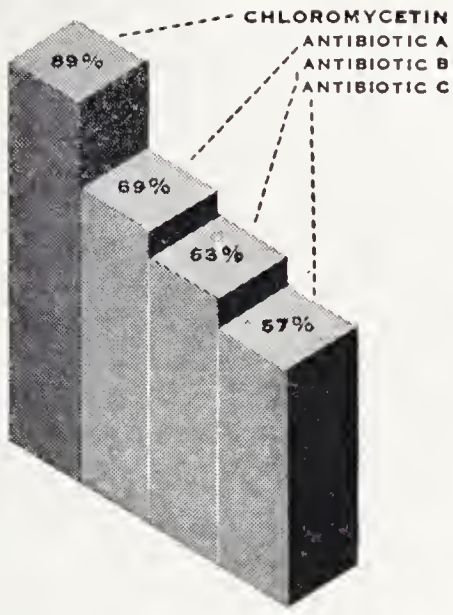
*the first thought for pain relief*

***Prescribe 1/20 gr. DILAUDID HCl Tablets or Ampules for Prompt Relief of Pain***

- Pain relief without hypnosis
- Smooth, quick action
- Minimum of side effects
- An opiate, may be habit forming

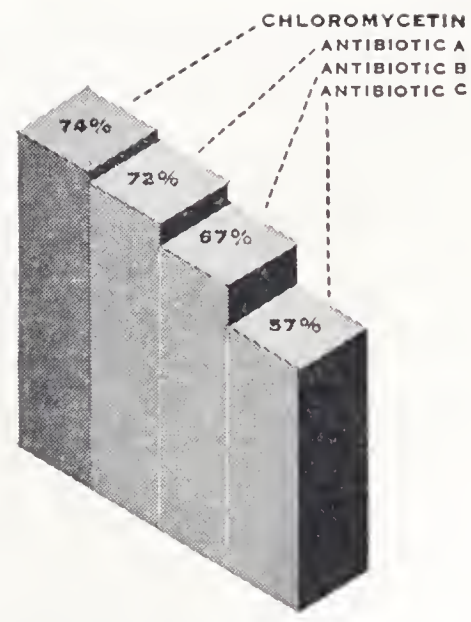
Dilaudid, brand of Dihydromorphinone, Trademark reg. E. Bilhuber, Inc.; marketed by Bilhuber-Knoll Corp., Orange, N. J.

**MERCK & CO. Limited** *exclusive distributor* MONTREAL TORONTO VANCOUVER VALLEYFIELD




NONHEMOLYTIC MICROCOCCUS AUREUS

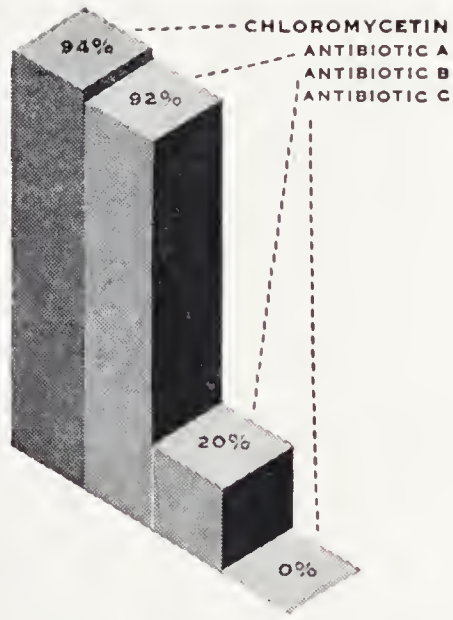
(363-418 STRAINS)




HEMOLYTIC MICROCOCCUS AUREUS

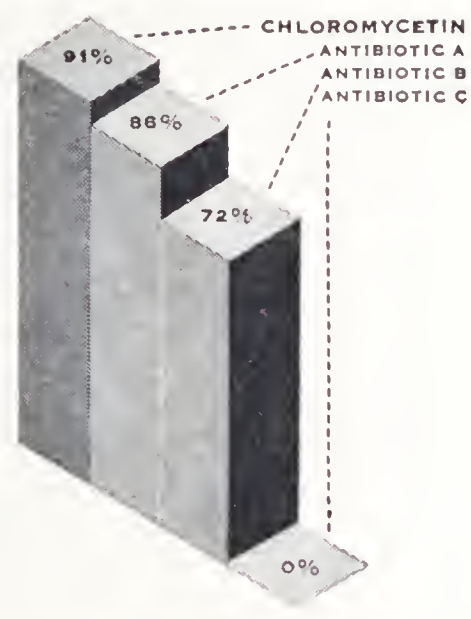
(729-776 STRAINS)

SENSITIVITY OF COMMON PATHOGENS TO **CHOROMYCETIN** AND THREE OTHER MAJOR ANTIBIOTICS*




ESCHERICHIA COLI

(478-586 STRAINS)




AEROBACTER AEROGENES

(153-193 STRAINS)

greater antibacterial efficacy...

# Chloromycetin®

## for today's problem pathogens

CHLOROMYCETIN is a potent therapeutic agent and, because certain blood dyscrasias have been associated with its administration, it should not be used indiscriminately or for minor infections. Furthermore, as with certain other drugs, adequate blood studies should be made when the patient requires prolonged or intermittent therapy.

*This graph is adapted from Altemeier, W. A.; Culbertson, W. R.; Sherman, R.; Cole, W.; Elstun, W., & Fultz, C. T.: *J.A.M.A.* 157:305 (Jan. 22) 1955.

PARKE, DAVIS & CO., LTD.

TORONTO 14, ONTARIO

# Ortho's
# new vaginal cream

- first in three leading tests
of spermicidal potency.

Sander-Cramer, Titration and Zone tests.

## *new...* medically

DELFEN is the first vaginal cream reported to be clinically effective when used alone.

## *new...* pharmaceutically

DELFEN is an oil-in-water emulsion — a cream.

## *new...* chemically

DELFEN Cream contains the highest concentration of the most potent, nontoxic spermicide ever discovered.

## *new...* clinically

Results to date show DELFEN Cream to be highly active, very esthetic and nonirritating.

Ortho

*Trade Mark Reg'd.